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BLUE JAY

Vol. 35, No. 2

June 1977

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The *Blue Jay* is published quarterly by the Saskatchewan Natural History Society, P.O. Box 1321, Regina, Saskatchewan, S4P 3B8. CN ISSN 0006-5099.

Editor: Gary W. Seib

Associate Editors: Margaret Belcher, J. Bernard Gollop, George F. Ledingham.

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Circulation: Lorne Scott

All items for publication should be address to the editor at 2325 Cornwall Street, Regina, Saskatchewan, S4P 2L4. Deadline for material to be considered for the September Issue is July 15, 1977.

SUBSCRIPTIONS-MEMBERSHIPS

Send all renewals, new memberships and correspondence concerning changes of address to the TREASURER, SNHS, BOX 1321, REGINA, SASKATCHEWAN, S4P 3B8.

The classes of membership in the Society are as follows: Regular \$5.00; Sustaining \$10.00; Patron \$25.00. Sustaining and patron memberships include the regular fee plus a donation for which a receipt is available for income tax purposes, upon request. Bulk orders (minimum of five to one address) are available to junior club members and to educational institutions at the rate of \$5.00 for the first subscription and \$2.00 for each additional one.

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Requests for quantities of reprints of any article in the *Blue Jay* should be sent to Centax of Canada, 1440 Scarth Street, Regina, Saskatchewan, within one month of publication. Contributors wishing a few extra copies of the current *Blue Jay* may get them at cost. Requests for these should be made to the Editor when material is submitted for publication.

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RECOGNITION AND CONTROL OF DUTCH ELM DISEASE IN THE PRAIRIE PROVINCES

HILDAHL, Northern Forest Research Centre, Canadian Forestry Service,
Winnipeg, Manitoba

Dutch elm disease, caused by the fungus *Ceratocystis ulmi* (Buism.) C. Moreau, was first observed in Holland and France in 1919. It was found in the United States in Ohio in 1930 and in Canada in Richelieu County, Quebec in 1944, the causal fungus having been introduced directly from Europe in diseased elm wood from which the bark had not been completely removed. Since then the disease has spread throughout most of the natural range of elms in North America, and has destroyed millions of trees.

In 1975, three outbreaks of the disease were diagnosed in Manitoba at Brandon, Selkirk, and Winnipeg. All occurred in picnic grounds and campsites adjacent to the Red and Winnipeg rivers where the trees are under stress due to annual spring flooding. How the fungus arrived at these sites is uncertain, but possibly it was introduced by tourists carrying diseased firewood, or by infected beetles carried on vehicles from Ontario and the United States. There was evidence that it was spread from Minnesota by infected logs carried downstream on the Red River during spring runoff.

Because these outbreaks created a serious hazard to adjacent healthy trees, the Manitoba Department of Agriculture and the City of Winnipeg immediately implemented control programs. However, despite the removal of hundreds of dying and recently dead trees during the fall and winter of 1975, the outbreaks spread in 1976. Increased incidence of diseased trees was particularly notable in the Brandon and Selkirk areas, where the problem was exacerbated by high populations of elm bark beetles, which are responsible for spreading the disease.

Even though the disease has not been detected to date in Saskatchewan and Alberta, it will ultimately spread to all natural and planted elm stands in the prairie provinces unless preventive action is taken now.

History shows that the most important factor affecting progress of the disease is the concentration of host trees. Native American elm stands are restricted to lakeshores and river valleys in the eastern prairies. Because they afford an abundance of breeding material for elm bark beetles it is expected that these stands will be completely devastated in the next decade. If selected native stands of elm located in cities and towns within these areas are to survive, they should be protected by immediate tree sanitation and bark beetle suppression programs.

Fortunately, most planted American and Siberian elms appear to be in less danger because of their isolated occurrence and distance from large continuous native stands of elm. Elms in major cities such as Regina, which has 68,000 planted elms, Saskatoon, which has 40,000, and Edmonton, which has 56,300, are not in imminent danger from the natural spread of the disease. However, there is always the danger of long-distance transport of spore-carrying beetles and diseased elm wood to unaffected areas by man. If this happens, the disease will probably occur first as single-tree infections, but by good management it should be possible to preserve most urban elms for many years. Immediate implementation of systematic detection surveys and recommended prevention practices by provincial, urban, and rural governments will be vital in preven-

Dutch Elm Disease



Wilted leaves are the first external symptom of early season infection.



Flagging in crown is characteristic of early season infection.



Tree killed by Dutch elm disease. Brown, wilted leaves remain on the tree.



Yellow-wilted leaves are characteristic of late-season infection.

ting the establishment and reducing the impact of the disease.

SYMPTOMS AND DAMAGE

The first noticeable symptom of the disease is sudden wilting of the leaves on one or more branches. These leaves later shrivel and turn brown, many persisting on the tree into winter. Leaf wilting caused by early-season infection is evident by mid-June but is most pronounced in July. After development of the foliar symptoms, affected branches die and the condition spreads until the tree dies.

Late-season infections, which are characterized by yellowing and wilting of the foliage followed by premature leaf drop, are often difficult to distinguish from natural autumn coloring of the leaves. Elms may also leaf out in the spring with smaller than normal leaves on part or all of the tree, and some branches may be dead. This generally indicates that the tree was infected the previous year, but too late in the season to express the normal symptoms.

Internally the disease appears as long, discontinuous dark brown streaks on the outer sapwood under the bark of infected stems. If the stem is cut in cross section, the discoloration forms a dark brown ring.

The symptoms of Dutch elm disease are similar to those of two other common diseases of elm, *Verticillium* wilt and *Dothiorella* wilt. These are less destructive because they are transmitted more slowly either through the soil or through the leaves by defoliating insects. Because of the similarity of symptoms, however, positive identification in the field is not possible and it is necessary to collect samples and culture the fungus in the laboratory.

Trees of all sizes are affected by Dutch elm disease, but the progress of disease varies with a tree's age and growing conditions. Young, vigorous trees may die within a few weeks, while slow-growing trees may survive the initial attack for two or more



Typical staining in sapwood

years, or even recover from very light infection. At times, however, even large trees are killed rapidly. On the prairies the American or white elm, *Ulmus americana* L., and the introduced Siberian elm, *U. pumila*, can be affected by the disease; infection is almost always fatal to American elm.

HOW THE DISEASE IS SPREAD

In western Canada the disease spread from tree to tree by the native elm bark beetle *Hylurgopinus rufipes* (Eichh.). The adult beetles are dark brown to black and less than 4 mm long. They breed in the inner bark of the trunks and large branches of living or recently dead elms, or other suitable elm material. The female constructs two diverging brood galleries which form a broad V across the wood grain. The eggs hatch and the larvae feed in galleries constructed at right angles to the brood galleries. When fully grown, the larvae pupate and emerge as adults. The brood tree was killed by Dutch elm disease.



native elm bark beetle

In the United States and eastern Canada, the smaller European elm bark beetle, *Scolytus multistriatus* (Marsh.), is also responsible for spreading the disease. It differs from the native elm bark beetle by constructing a single brood gallery parallel to the grain of the wood and feeding in twig crotches. This species has not yet been reported in the Prairie Provinces.

PREVENTION

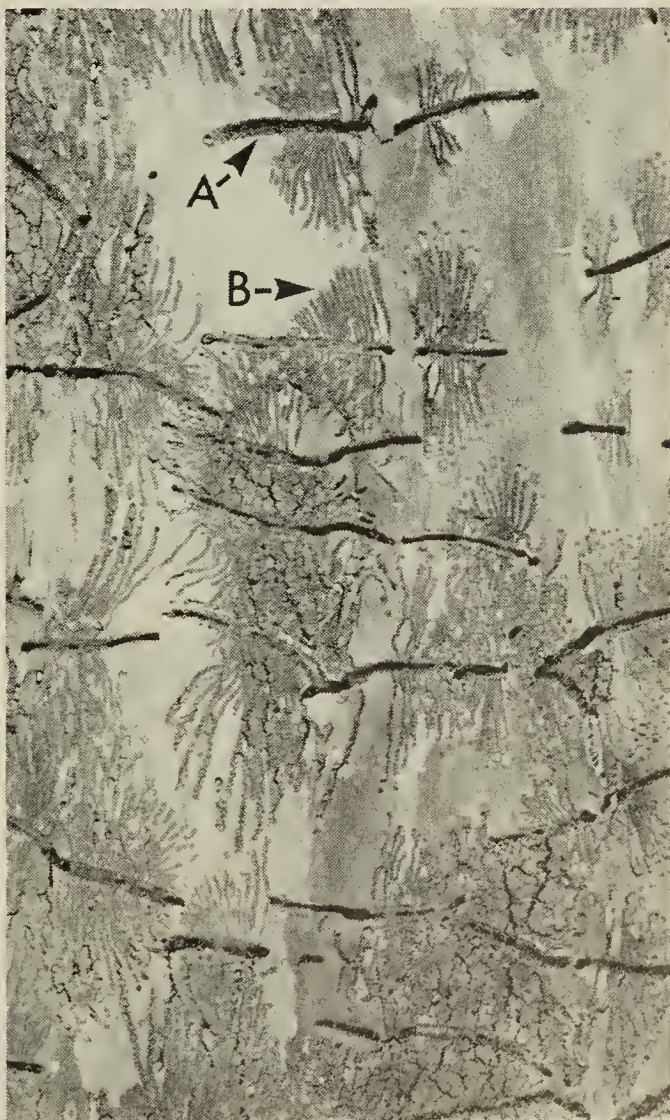
In areas where Dutch elm disease is not present the immediate implementation of tree maintenance and sanitation programs is essential to prevent it becoming established. Good tree maintenance, including pruning, watering, fertilizing, and insect control, will ensure healthy vigorous elms. Sanitation cutting to reduce potential breeding sites for the bark beetle is also a must. This means the prompt removal and

disease, the causal fungus produces spores in the brood galleries and the emerging adults are contaminated. When feeding on living elms they can introduce the spores into the water-conducting vessels of the tree, initiating a new infection.

There appear to be two fairly distinct groups in the beetle population: (a) one that emerges as adults in the spring and overwinters in bark near the base of living elms, and (b) one that overwinters as larvae in the brood

of overwintering adults (group a) emerge in mid-April to early June and feed briefly on the branches of dying elms before laying eggs in dying trees or recently cut elm wood. Some of their offspring emerge in late summer and feed until fall before constructing tunnels for hibernation. Finding boring dust in the bark fissures of dying elms in fall and spring indicates overwintering bark beetles. Adults that have picked up the fungal spores the previous year and remained contaminated overwinter are responsible for early-season infections.

The overwintering larvae (group b) emerge as adults in late June through August and after feeding on living elms lay eggs in dead and dying trees. Adults that emerge from this group are the late-season infections and are usually less common.



Brood (A) and larval feeding (B) galleries of native elm bark beetle

destruction of unhealthy, dead, and dying elms, broken and dead branches on living trees, and stumps with bark present (to ground level). Trees salvaged for lumber must be immediately and completely debarked and the waste material destroyed.

Good tree maintenance and sanitation should be practiced by individuals and government agencies in urban and rural areas alike. Communities that have stringently practiced sanitation have reported notable success. For example, in the United States, sanitation programs in Chicago from 1957 through 1971 and Syracuse from 1951 through 1964 kept losses to less than 2% of the elm population annually. Many cities without sanitation programs lost 80-95% of their elms by 1966. A similar program in Fredericton, New Brunswick limited losses to 5.3% of the initial elm population.

CONTROL

In areas where Dutch elm disease is present, tree maintenance and sanitation programs are also essential to reduce losses. Spraying with insecticides to reduce bark beetle populations is also important in preventing disease spread. At present methoxychlor is the only insecticide registered in Canada for use against elm bark beetles. Trials are being conducted on new insecticides, particularly potential trunk-base sprays to be applied in late summer to control the overwintering adult bark beetle population in healthy elms. These sprays may be relatively ineffective unless brood wood has been virtually eliminated beforehand in the area. The program must include all elms within an infected area; spraying individual trees will not control the disease.

A method of reducing the chance of infection and curing lightly infected trees has been developed by the Canadian Forestry Service. The treatment involves the low-pressure injection of Lignasan-P (methyl-2-benzimidazole carbamate-phosphate), a systemic fungicide, into

the roots or root flares (the area of tree where the trunk meets the root). Research shows that if applied correctly, the chemical remains effective up to two years. Because tree injections are costly and can be done only under license from the Ontario Society of Tree Councils, they will probably be most useful for protecting high-value trees in urban centers.

YOUR HELP IS NEEDED

Control of Dutch elm disease is the sole responsibility of government. A vital step in restricting its spread to the prairies will be early detection of new outbreaks. This can be greatly assisted by the vigilance of naturalists, horticulturists, and other concerned citizens. When an elm with suspicious symptoms is observed, the proper authorities should be informed immediately.

In Saskatchewan:

Plant Pathology Specialist
Plant Industry Branch
Saskatchewan Department of
Agriculture
Regina S4S 0B1
(Tel: 565-4671)

In Alberta:

Northern Forest Research Centre
Canadian Forestry Service
5320 - 122 Street
Edmonton T6H 3S5

In Manitoba:

Manitoba Department of
Agriculture
Citizens Inquiry Service
Norquay Building
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(Tel: 957-8920;

rural 1-800-292-9222)

ACKNOWLEDGMENTS

Financial assistance for the publication of the color plates was generously provided by: Dupont of Canada Limited, the Saskatoon Horticultural Society, the City of Regina, and the City of Saskatoon.

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Blackly rose

Gary W. Seib

FURTHER NOTES ON THE VASCULAR FLORA OF THE HASBALA LAKE REGION, SASKATCHEWAN

B. DE VRIES, Fort Qu'Appelle Herbarium, Fort Qu'Appelle, Saskatchewan

The purpose of this paper is to document (1) the addition of 18 taxa to the vascular flora of the Hasbala Lake region in northeastern Saskatchewan, (2) the range extensions of four taxa, and (3) the addition of one taxon to the flora of Saskatchewan.

Earlier botanical collections in the vicinity of Hasbala Lake were made by J. W. Tyrrell¹⁰ and G. Scotter.^{7 8 9} A more recent detailed study of the plant species, topography and plant communities was made by Argus.¹

Our field party visited Hasbala Lake in 1973, a region lying well within the subarctic section of northeastern Saskatchewan. Our survey was designed to cover as much terrain as time allowed with the objective of discovering as many unusual plants as possible.

All specimens collected have been identified by the author, and a complete set of plants deposited in the Fort Qu'Appelle Herbarium. Except for the Monocotyledoneae, the nomenclature followed is that of Boivin.²

FIRST RECORDS FOR THE HASBALA LAKE REGION

Carex supina Willd. Ssp. *spaniocarpa* (Stead.) Hult. 9085-73. Only as a pioneer on sandy gravel slope of esker. Previously collected from Warren Lake¹ and Lake Athabasca.⁵

Eriophorum vaginatum L. Ssp. *spissum* (Fern.) Hult. 9044-73. In wet depression on *Sphagnum* with *E. vaginatum* in *Picea mariana* muskeg. This is the first report of the subspecies for northeastern Saskatchewan. The species was previously reported by Argus.¹

Populus tremuloides Michx. 9145-73. Known only from margin of *Carex*

meadow in a depression at base of esker as stunted individuals. shoots were vegetative. The species was previously collected at Warren Lake.¹

Betula occidentalis Hooker var. *occidentalis*. 9036-73, 9064-73. frequent as a small tree (3-4 m) on sandy esker in *Picea mariana* — lichen association and rare on sandy shore. First recorded for Patter Lake.¹

Betula papyrifera Marsh. *papyrifera*. 9140-73, 9000-73. Collected from sandy slope of arctic esker and in *Picea mariana* — feather moss wood.

Urtica dioica L. var. *procera* (Mill.) Wedd. 9127-73. Rare, known only from base of sheltered slope of esker near wet *Carex* fen under *Populus balsamifera*. A northern extension of range of this subarctic American species, previously known from Alberta in southern and central Saskatchewan.

Rumex fennicus Murb. 9127-73. Rare and occurring as a few individuals at margin of wet *Carex* fen near base of sheltered slope of esker. This record is a marked northward extension of this introduced European species frequently recorded in southern and central regions of Saskatchewan. This is the first collecting site and the previous records show signs of human disturbance one time.

Anemone multifida Poir. *sanguinea* (Pursh) Fern. 9096-73. Seen only once on dry lichen covered slope of dry depression between esker ridges. This is the first record of this form for northeastern Saskatchewan. The species was previously collected by Argus.¹

Ranunculus gmelinii DC. 9076-73. Rare. Observed only once partly submerged in a shallow pool in wet *Picea mariana* muskeg.

Ranunculus lapponicus L. 9071-73. Rare. Known only from *Hylocomium splendens* mat in wet *Picea mariana* muskeg. Known from Patterson Lake in a similar habitat.¹

Arabis lyrata L. 9097-73. Seen only on dry lichen covered slope of dry depression between esker ridges.

Cardamine pratensis L. var. *angustifolia* Hooker. 9087-73. Rare. Collected only once from the moist boulder field in association with *Parassia palustris* var. *tenuis* and *Stragalus alpinus*. A southward extension of the range of this arctic-circumpolar species.

Geum allepicum Jacq. 9095-73. Rare. Collected once from a grassy hummock in *Carex* meadow. A northward extension of the Saskatchewan range of this subarctic-temperate American species, previously known from south-central regions of the province.

Viola adunca SM. 9041-73. Seen only once as a few scattered individuals on a dried-out hummock in dry lichen covered depression with dwarf stands of *Picea mariana* between esker ridges.

Cornus canadensis L. var. *dutillyi* (ep.) Boivin. 9030-73. Rare in a *Picea mariana* muskeg among the species. This is the first report of the variety from northeastern Saskatchewan. The species was reported by Argus.¹

Pinguicula villosa L. 9072-73. Rare. Seen only once on wet *Sphagnum* hummock in *Picea mariana* muskeg. An arctic-subarctic circumpolar species represented in this general region by a collection from Lake Athabasca.⁵

Arnica alpina (L.) Olin var. *unensis* Boivin. 9148-73. Known only from exposed upper ridge of esker on mineral soil. A subarctic American species previously collected from Lake Athabasca.³

Senecio paucifloris Pursh. 9025-73. Seen only on the moist boulder field as rare individuals in shallow depression with *Carex scirpoidea*. Apparently new to the flora of Saskatchewan but not unexpected in view of its occurrence in northern Manitoba and Alberta.^{2, 4} It is principally a subarctic-alpine species favouring calcareous meadows.

SECOND RECORDS FOR THE HASBALA LAKE REGION

Two of the taxa collected were previously reported from this region by Argus as new to the flora of Saskatchewan. They are —

- 1) *Salix arctophylla* Cockerell. 9050-73, 9062-73, 9093-73. Infrequent on wet gravels of drainage way near Quillwort Lake and seen in wet *Picea mariana* muskeg. Common on the boulder field with *Vaccinium uliginosum* L. var. *uliginosum*.
- 2) *Salix reticulata* L. 9066-73, 9080-73, 9098-73. Rare in *Picea mariana* mixed woods and frequently carpeting wettish open subarctic habitats in *Picea mariana* muskeg. Common on the moist boulder field.

COMMENTS

It appears that four of the taxa which Argus recorded only for the Patterson-Warren Lakes region have now been found at Hasbala Lake and that 14 taxa collected at Hasbala Lake were not recorded by Argus for the Patterson-Hasbala Lakes.

Argus recorded 12 taxa for Hasbala Lake as belonging to the arctic-subarctic element (18 for the region as a whole).¹ In addition, four of the taxa reported in this paper bring the revised total of 16 for Hasbala Lake (18 for the region). This element comprises 8.1% of the overall total for Hasbala Lake, compared to 8.3% for the region as a whole.

The presence of a significant arctic-subarctic element in the flora of northeastern Saskatchewan is not surprising, since the study area is part of

the northwestern transitional section of Rowe⁶ with close proximity of open subarctic woodlands with mixed forest-tundra vegetation.

SUMMARY

Fourteen taxa are added to the vascular flora of the Patterson-Hasbala Lakes region in northeastern Saskatchewan, thereby raising the total to 127. Eighteen taxa, including two subspecies, five varieties and one form, are added to Hasbala Lake, thus making a total of 197. One species is reported as new to Saskatchewan.

A reinterpretation of the vascular flora of Hasbala Lake reveals that 16, or 8.1% (18, or 8.3% for Patterson-Hasbala Lakes) of the taxa belong to the arctic-subarctic element.

ACKNOWLEDGEMENTS

The author is indebted to his field companion Ron Hooper, field entomologist for the Saskatchewan Museum of Natural History and Mr. William Richards, Regional Field Supervisor, Department of Northern Saskatchewan, La Ronge, for their kind cooperation and assistance, without which this investigation would not have been possible.

¹ARGUS, G. W. 1966. Botanical investigations in northeastern Saskatchewan: the subarctic Patterson-Hasbala Lakes region. *Canadian Field Naturalist*, 80: 119-143.

²BOIVIN, B. 1967. Flora of the Prairie Pro-

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³BREITUNG, A. J. 1957. Annotated catalogue of the vascular flora of Saskatchewan. *American Midland Naturalist* 58: 1-72.

⁴MOSS, E. H. 1959. *Flora of Alberta* University of Toronto Press, 546 pp.

⁵RAUP, H. 1936. Phytogeographic studies in the Athabasca-Great Slave Lake region. 1. Catalogue of the vascular plants. *Journal Arnold Arboretum*, 17: 180-315.

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⁷SCOTTER, G. 1961. Botanical collections in the Black Lake region of northeastern Saskatchewan, 1960. *Blue Jay*, 39: 23-33.

⁸SCOTTER, G. 1964. Effect of forest fire on the winter range of barren-ground caribou in northern Saskatchewan. *Canadian Wildlife Service Management Bulletin, Series 1*, 18: 1-109.

⁹SCOTTER, G. 1965. A plant collection from the Cochrane River region, northwestern Manitoba. *Blue Jay*, 43: 96-100.

¹⁰TYRRELL, J. B. 1897. Report on Dqobau, Kazan and Ferguson Rivers and northwest coast of Hudson Bay. *Geological Survey of Canada, Annual Report*, 9, part F: 5-218.



Dew on grass

J. B. Go

BIOLOGICAL SURVEY OF INSECTS OF CANADA

The Entomological Society of Canada has been awarded a contract by the Canadian Government to conduct a Pilot Study for a Biological Survey of the Insects of Canada. This project is intended to establish the foundations for a continuing biological survey, and a major aim is to assess the resources and needs of Canadian research in the identification, distribution and biology of insects (including arachnids and other arthropod forms).

Four types of questionnaire have previously been distributed. If any persons have information to contribute on relevant resources or species and were overlooked in the original mailing, we would be very pleased to receive requests for the cable questionnaires as listed below.

- (1) Questionnaire to individual entomologists, to ascertain the location of personnel and programs, and seek information on the state of knowledge in Canada of their taxonomic or ecological groups of interest.
- (2) To resource managers, environmentalists and other users of information on insects, to ascertain their present and future needs for entomological information.
- (3) To directors of institutions conducting entomological research in Canada, to ascertain programs and facilities.
- (4) To curators of collections in Canada and elsewhere, to ascertain the whereabouts of significant holdings of Canadian arthropod material.

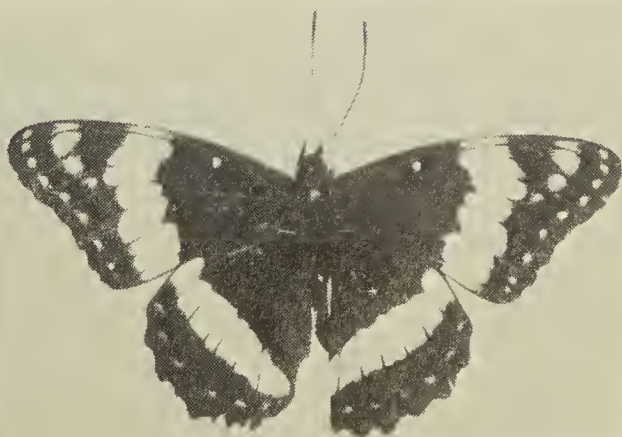
Secretariat,
Biological Survey Project,
202 - 1316 Carling Avenue,
Ottawa, Ontario K1Z 7L1

ERRATA

Since the publication of "Some Pierid flies and skippers from the Milk River - Lost River area of southeastern Alberta" by W. W. Smith and C. D. Gregory in the March 1977 issue of the Canadian Journal of Zoology, a visit to the National Museum in Ottawa by Dr. Bird has resulted in new information about *Limenitis weidemeyeri*'s Admiral. The paragraph dealing with this species should therefore be revised to read:

WEIDEMEYER'S ADMIRAL
Limenitis weidemeyeri oberfoelli.
Smith, 1974. This species has not been previously reported as occurring in Canada, although there is a specimen of *Limenitis weidemeyeri* in the National Museum with the number 6 and the data "Crow Nest, Alta, Aug. 1883. G. Geddes." Gregory (1977) reports this for Alberta as *Limenitis weidemeyeri weidemeyeri*. Examination of this specimen by

Bird in January, 1977, revealed it to be of the subspecies *angustifascia* which occurs in California. Geddes' record book has a *Limenitis weidemeyeri*: G1297 from California. No specimen G1297 was found at the National Museum, where Geddes' collection is deposited. It seems highly likely that the specimen numbered G1296 is in fact the missing G1297.



Weidemeyer's Admiral

W. W. Smith

FIRST RECORD OF THE STONECAT IN SASKATCHEWAN WATERS

LEROY M. ROYER, Kelsey Institute of Applied Arts and Sciences,
Saskatoon, Saskatchewan, and
C. BLAINE ANDERSON, Box 310, Shaunavon, Saskatchewan

Members of the catfish family (*Ictaluridae*) are not common or widespread in Saskatchewan waters. Three species, the black bullhead (*Ictalurus melas*), the brown bullhead (*I. nebulosus*) and the tadpole madtom (*Noturus gyrinus*) are reported by Scott and Crossman (1973) to occur in the Souris River basin of southeastern Saskatchewan.

In July, 1975, Mr. Anderson collected several specimens of the stonecat (*Noturus flavus*) while completing a fish collection as part of the course work for the Renewable Resources Technology Program at Kelsey Institute of Applied Arts and Sciences, Saskatoon. This species was collected in the Frenchman River (NE $\frac{1}{4}$ 33-4-17 W 3rd) from a pool of slow moving water on the north side of a high bank. Very little vegetative growth was present in the river and at this point and the bottom was composed mainly of mud and a few large stones.

Previous distribution records for this species in the prairie region of Canada indicate its presence only in the Red River as far north as Winnipeg, Manitoba and in the Milk River (Missouri River drainage) of southern Alberta. The Frenchman River in Saskatchewan is also part of the Missouri River system since it flows into the Milk River in Montana.

The stonecat can be distinguished from most other members of the family Ictaluridae by the presence of an adnate adipose fin (low ridged forward extension of the caudal fin). The much smaller tadpole madtom also has this feature. Other diagnostic characters of the stonecat are the premaxillary tooth patch with lateral extensions (lacking in tadpole madtom), square caudal fin, and body coloration strongly countershaded (dark above, yellow to white below).

The three specimens of stonecat collected from the Frenchman River in 1975 measured 85, 113 and 154 mm total length. One specimen is in the personal collection of Mr. Anderson, a second is in the fish collection at the Saskatchewan Fisheries Laboratory, Saskatoon and the third is in the collection at Kelsey Institute, Saskatoon, Saskatchewan.

BROWN, C. J. D. 1971. Fishes of Montana. Big Sky Books, Montana State University, Bozeman, Montana.

FEDORUK, A. N. 1971. Freshwater fishes of Manitoba: Checklist and keys. Manitoba Dept. Mines, Res. and Envir. Management.

SCOTT, W. B. and E. J. CROSSMAN. 1973. Freshwater fishes of Canada. Bull. Fish. Res. Bd. Canada. Ottawa.



SAGE GROUSE

Y W. SEIB, 2325 Cornwall Street,
na, Saskatchewan S4P 2L4

he lordly Sage Grouse haunt the
ns of southwestern Saskatchewan
southern Alberta. Each spring

they gather on traditional dancing
grounds to fight for territory, and the
right to breed with the willing
females. These photographs were
taken at Govenlock, Saskatchewan on
the Easter week-end.





AN EXTRA-LIMITAL NESTING OF THE WOOD THRUSH IN MANITOBA

W. J. WALLEY, 19 Edgar Ave., Delta, Manitoba. R7N 0R4

According to Godfrey, the northern boundary of the breeding range of the Wood Thrush prior to 1966 included southeastern South Dakota to central Wisconsin, southern Ontario, northwest to Sault St. Marie and southwestern Quebec to southwestern Maine.² More recently, this species has extended its breeding range into Nova Scotia.^{7 8}

Sight records in western Canada indicate that the Wood Thrush has been attempting to extend its range northwest, but these records have an unusual pattern. In Manitoba, it was recorded twice in 1934 at Whitemouth, in 1940 at Fort Garry (Winnipeg) and in 1942 in Winnipeg (Table 1). Apparently no further sightings were reported until 1973. On May 24 Pat O'Neil recorded the first authenticated sighting for Saskatchewan in Saskatoon.⁹ On October 5, E. L. Fox reported the second Saskatchewan record from Regina.¹ In 1974, O'Neil again observed a Wood Thrush in her yard on April 27, 28 and 29.¹⁰ There are no sight records for Alberta, not even hypotheticals.¹¹

In North Dakota, a singing adult was recorded on July 4, 1969, along the Red River.¹³ In 1971, individual birds were reported at Hannaford on May 15 and at Fargo on May 21, both in the southeast part of the state.¹²

MANITOBA STUDY AREA

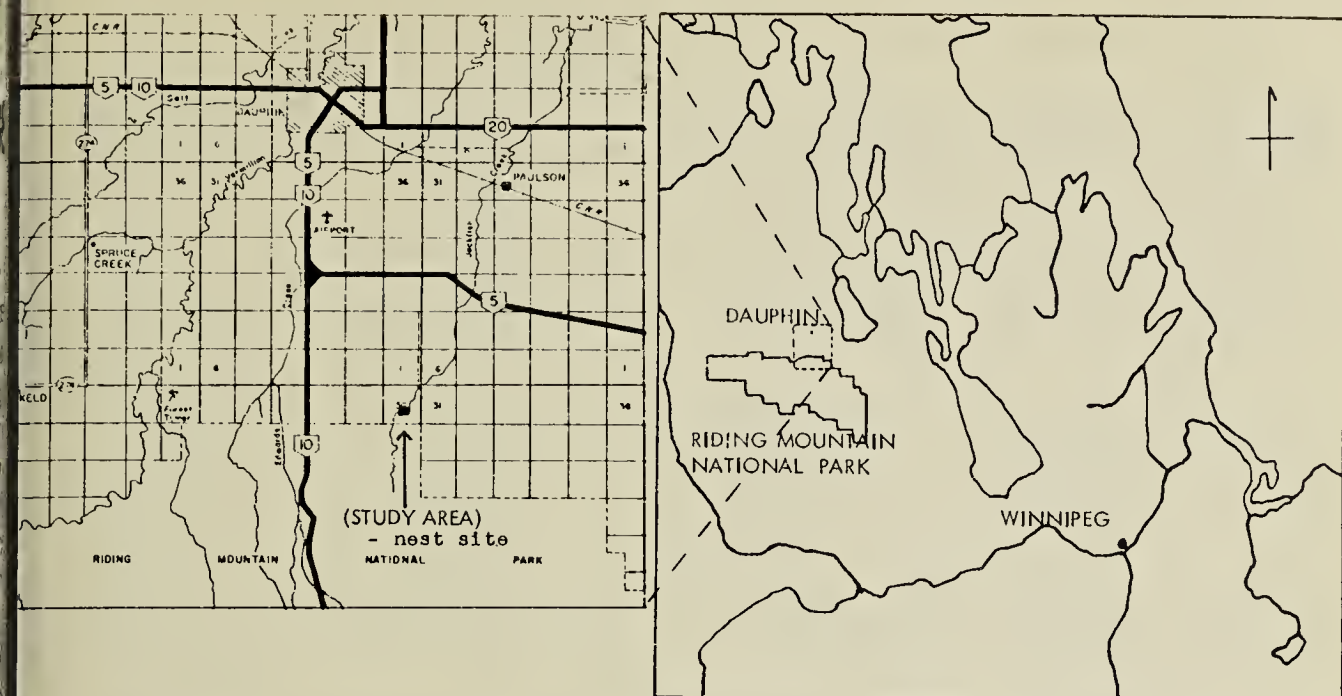
In western Manitoba, the eastern and northern escarpments of Riding Mountain rise abruptly from the surrounding aspen parkland. Within approximately 4.8 to 7.5 km the elevation increases from about 335 m a.s.l. at the foot of the escarpment to 670 m at the top of the plateau on the north and from about 425 m to 700 m a.s.l. on the east. With the exception of portions of the foot of the escarpment, the entire plateau is occupied by Riding Mountain National Park.

Mixed white spruce (*Picea glauca*) — trembling aspen (*Populus tremuloides*) forest at the high elevations merges into dense aspen forest lower down and at the foot of the mountain. American elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*) and Manitoba maple (*Acer negundo*) occur along streams at and near the base of the escarpment where these waters emerge from the gorges that cut through the escarpment. Stands of these large deciduous trees sometimes have associated semi-open areas consisting of shrubby bur oak (*Quercus macrocarpa*), some Manitoba maple and small groves of aspen with clumps of shrubs, including hazel (*Corylus* sp.). A dense understory of hazelnut is found at the foot of the escarpment where trees, particularly aspen, are not too dense for growth.

Several species of birds generally associated with more easterly habitats have been attracted to these habitats at or near the foot of Riding Mountain. These have included the Scarlet Tanager which was first identified in the park by H. W. Copland (pers. comm.) on July 1, 1972. In 1975 a nest was discovered by Bob and Dave Carmichael (pers. comm.). Golden-winged Warblers and Indigo Buntings have been reported by Walley.¹⁴ Both have been observed regularly during the breeding season by the writer since 1972.

The area in which the Scarlet Tanager nest was found in 1975 was studied by the author in 1976. This approximately 4-ha area had three habitat types including:

1. Elm-maple-ash-aspen habitat along Jackfish Creek which flows down from the top of the plateau and passed through the study area from southwest to northeast.



1. Location of Wood Thrush nest near Riding Mountain National Park, Manitoba.

A semi-open bur oak-maple-aspen habitat with clumps of hazel-nut and other shrubs at the very foot of the escarpment and south of the creek.

Scattered elms in a pasture north of the creek.

The study area (Fig. 1) was located approximately 0.5 km north of the north boundary of Riding Mountain National Park (51° 01'30" N., 100°0'00" W.).

OBSERVATIONS AND DISCUSSION

In the early morning of June 12, 1976, an excursion was made into the bur oak-maple-ash-aspen habitat in the northeastern part of the study area. The objective was to locate Scarlet Tanager and find a nest. At approximately 0840 (D.S.T.) a thrush was heard. After several calls I realized that the bird was not a local species, it could be a Wood Thrush. I had become familiar with the song of this species the previous winter from listening to R. T. Peterson's records "field guide to bird songs".

The bird was not easily approached, but on the third attempt it landed 6 m from me in an aspen and gave loud "Pit, Pit" alarm notes. From 15 m the bird

was studied with 7 x 50 field glasses. It was immediately identified as a large thrush with a rusty head and nape compared to the brownish back and wings. In side view, the large, round, dark spots on a white breast were clearly noted. As the bird remained perched for almost 20 seconds, other traits were observed including: a white eye-ring; a dull yellowish beak, especially the lower mandible for about 3/4 of its proximal length — the tip was black; and a white auricular patch with more-or-less horizontal, thin, black lines running through it. The Wood Thrush was positively identified. Upon leaving the area, the Wood Thrush songs, consisting of a flute-like note followed by a trill, emanated from two directions indicating the presence of two males. However, no more than one male was ever again observed during the study.

The Wood Thrush site was visited in the late afternoon, evening and early morning of June 15, 19 and 20, respectively, but no Wood Thrush was heard or seen on any of these trips and the birds were then believed to have been transients.

On the evening of June 23, when I was accompanied by S. A. Kentner, the Wood Thrush was again heard

Table 1 Sight records of the Wood Thrush in western Canada

Source	Observer	Date	Number of Birds	Location	Remarks
Lawrence ³	V. Latta	May 20, 1934	1	Whitemouth, Man.	Singing in a tree Observed at 9 m
Lawrence ⁴	V. Latta	Aug. 5, 1934	1	Whitemouth, Man.	Observed at 3 m
Lawrence ⁵	A. Haak	May 14, 1940	1	Fort Garry, Man.	Feeding on the ground with W throated Sparro
Lawrence ⁶	Mrs. E. Humphries	Sept. 18, 1942	2	Winnipeg, Man.	"An excellent look"
O'Neil ⁹	Mrs. P. O'Neil	May 24, 1973	1	Saskatoon, Sask.	On ground 9 m Viewed by 9 oth
Fox ¹	E. L. Fox	Oct. 5, 1973	1	Regina, Sask.	"Carefully stud
O'Neil ¹⁰	Mrs. P. O'Neil	Apr. 27, 28, 29, 1974	1 (each day)	Saskatoon, Sask.	Apparently trav ing with a large group of Herm Thrushes
This report	W. J. Walley	June 12, 23, 25*, 1976	2**	Near Dauphin, Man.	June 12: one observed in an aspen at 15 m. second bird wa heard singing. (See text)

* Date of nest discovery

**See text

singing in the same area where it had been heard on June 12. Although the male appeared to be extremely nervous, moving quickly from branch to branch and delivering "Pit, Pit" alarm notes, we were both able to see its heavily spotted breast. Near dusk the pair was identified as both birds gave muted alarm notes while cautiously moving through the branches of the maples together and just overhead. Unwittingly, as it was later learned, we had been standing less than 15 m from the nest tree at that time. As we left the area the male gave an unusual variation of flute-like notes and trills.

According to Godfrey the Wood Thrush nests about 2 to 4.5 m up in mature deciduous trees.² Upon learning this, it was realized that much of the available cover could be eliminated as possible nesting sites including the shrub layer, the tree tops and the aspens as no cover occurred on these trees at that stratum. Near

0600 on June 25 a systematic search for the nest was begun. Eventually a nest with an incubating bird was found. It was conspicuously situated on a branch of a slim, approximately 12 m high maple, some 2 m from the trunk and an estimated 5 m up. The tree was one of four maples of similar size in a close grouping about 40 m south of the creek. In poor light, however, the eye-ring, a largely light coloured throat and dark lateral stripes on the throat were noted, indicating a female Wood Thrush. The male was singing from 75 to 100 m to the southwest of the nest.

Realizing the uniqueness of this nest in Manitoba, it seemed essential that the record be documented. Human activity in the vicinity of the nest would increase the chance of nest predation, but this prospect seemed highly probably anyhow. A family of Common Ravens including fledged young had been heard

regularly in the general area of a poorly concealed nest. Furthermore, at least one Red Squirrel had been seen within 20 m of the nest on June 25.

The nest was revisited in the late afternoon of June 25. When a ladder was ascended, the incubating female perched over the edge of the nest, flushed giving "Pit, Pit" alarm notes. The bird lit on a stump about 10 m away and, even without field glasses, the spotted breast and rusty head confirmed the identification. This was the only time that the female flushed from the nest. With the aid of a mirror taped to the blade of a key stick, four greenish-blue eggs were counted in the nest. Photographs of the clutch were not taken to avoid excessive disturbance. Indeed, it would have been impossible without a 5-to-6 m stepladder as the branch was too thin to support a person. Upon withdrawing from the nest tree, both adults were flushed giving muted alarm notes near-

by checks were made on the nest the following few days, usually from a distance of about 35 m and little time was actually spent in the immediate vicinity of the nest. On June 26 the family of ravens was found in the forest some 60 m west of the thrush nest. American Robins were frantically shrieking alarm. It was with relief that the female thrush was subsequently seen incubating her eggs. Earlier that morning she was photographed several times on the nest from no closer than 25 m with a 300 mm photo lens ($400 \text{ mm} \times 2\times = 800 \text{ m}$).

At 1300 on June 27 the species and sex was verified by Angus MacLean, Assistant Superintendent of Riding Mountain National Park. As a competitive birder from eastern Canada, Mr. MacLean was familiar with the Wood Thrush. After observing the incubating female through a 20-power spotting scope from 35 m for about 10 minutes, the male flew in and perched within 0.5 m of the nest. For 20 minutes it posed motionless with its head toward the observers. This was the only time that both birds were

seen at the nest.

Little time was spent in the area again until dusk on June 28 when a quick check was made. At that time an adult, presumably the female, was perched on the edge of the nest with head low, apparently peering into the nest, suggesting that the eggs had hatched. However, an adult was never seen at the nest again. The following day, June 29, at 4:15 p.m., the nest was studied with the spotting scope from across the creek. In 20 minutes of observation, no activity was noted. The ground beneath the nest was then searched for young, but none was found. About this time the raucous croaks and squawks of the ravens were heard about 100 m to the south of the nest. At 6:30 p.m., approximately 2 hours after my arrival, the male Wood Thrush began to sing.

When the nest area was visited at 3:15 p.m. in June 30, the male was singing with unprecedented frequency and vigor. Again the nest was observed with the spotting scope from north of the creek, but no activity was noted and it was apparent then that the nesting attempt had failed. This was confirmed when the mirror used from the top of the ladder revealed an empty nest. The male was then pursued and a recording of the song and alarm notes was obtained.

On July 1 the author remained in the area of the nest from 0600 to about 0800. During this time the male sang, but less frequently and with less vigor than it had on the previous day. The nest was photographed in situ and measurements were obtained. At a height of 5.9 m, the nest was somewhat higher than had been previously estimated. The nest tree, estimated to be 12m high, was one of four maples all of similar size, occurring in an area of almost 5 m². Finally, the nest and supporting branches were collected.

The nest was not dismantled for analysis of composition; however, it was examined. The nest consisted of an exterior portion, constructed mainly of fine grasses and some dead leaves, and an inner solid cup loosely

lined with fine, dark rootlets. The exterior also contained a few rootlets and a little green moss near the top which extended about half way around the nest. A few heavier, light coloured rootlets occurred on the upper edge of the nest. Trash, which was reported by Godfrey, was not noted in this nest, but paper, etc. would not be expected as the closest human habitation was over a km away and the area is rarely frequented by humans.² The inner cup was solid and light coloured, apparently constructed of moist decayed wood and clay. According to Godfrey the inner cup is constructed of mud. The variation observed in this nest probably reflects the availability of suitable nesting materials, notably clay from the open bank faces of Jackfish Creek nearby. The inside cup dimensions at the top of the nest were 84 x 89 mm. The cup depth of 49 mm was measured with the rootlets removed as they had piled up at the bottom of the cup.

The area was visited in the evenings of July 8 and 15 to determine if renesting had occurred. However, in 30 minutes on each of these trips, there was no evidence that the thrushes were even in the area. Playback of the taped song of the Wood Thrush produced no results.

The nest, tape of the male's song and alarm notes together with the slides of the incubating female (of too poor quality for this paper), were shipped to W. E. Godfrey of the National Museums of Canada in Ottawa for analysis. Godfrey verified the record stating that the nest, slides and taped song and alarm notes were all identifiable as being those of the Wood Thrush. This is the first breeding record for Western Canada. Indeed, Godfrey (pers. comm.) states that he knows of no previous nesting records of this species in Canada west of Sault Ste. Marie, Ontario.

ACKNOWLEDGEMENTS

Special thanks is made to W. E. Godfrey for his analysis of the nesting evidence, verification of the record and for taking the time to write

several letters concerning the Special thanks also goes to H. V. Copland of the Manitoba Museum Man and Nature for providing valuable information on Manitoba sightings. Mr. and Mrs. Cohrs of the Nova Scotia Bird Society provided documentation on the Nova Scotia breeding records. Dr. D. Boag and Dr. W. R. Salt of the University of Alberta provided information on the status of the bird in Alberta. Other assistance was provided by Ludwig Carbyn, W. L. Clark, Robert E. Jones, S. A. Kentner, A. MacLean, Phil Minton, Wayne Minton and Dr. Robert W. Nero. Gratitude expressed to all of these people as well as to the landowners, Bob and Dave Carmichael.

¹FOX, E. L. 1974. Second Saskatchewan Wood Thrush. Blue Jay. 32: 46.

²GODFREY, W. E. 1966. The birds of Canada. Nat. Mus. Canada Bull. 408 pp.

³LAWRENCE, A. G. 1934. Chickadee No. 687. Winnipeg Free Press.

⁴LAWRENCE, A. G. 1934. Chickadee No. 703. Winnipeg Free Press.

⁵LAWRENCE, A. G. 1940. Chickadee No. 1002. Winnipeg Free Press.

⁶LAWRENCE, A. G. 1942. Chickadee No. 1123. Winnipeg Free Press.

⁷NOVA SCOTIA BIRD SOCIETY NEWSLETTER. 1973. 15(2):71.

⁸NOVA SCOTIA BIRD SOCIETY NEWSLETTER. 1976. 18(2):68.

⁹O'NEIL, P. 1974. First Saskatchewan Wood Thrush. Blue Jay 32:44.

¹⁰O'NEIL, P. 1975. Another Saskatchewan Wood Thrush. Blue Jay 33:189.

¹¹SALT, W. R., and J. R. SALT. 1976. The birds of Alberta. Hurtig Edmonton. 512 pp.

¹²SPRINGER, P. F., JOHNSON, D. H. and J. T. LOKEMOEN. 1972. Spring migration of birds in North Dakota in The Prairie Naturalist 4:23-32.

¹³STEWART, R. E. 1975. Breeding birds in North Dakota. Tri-College Center Environmental Studies, Fargo, Dakota. 295 pp.

¹⁴WALLEY, W. J. 1973. A study of warblers in Riding Mountain National Park, Manitoba. Blue Jay 31:158.

FIRST RECORD OF A SUMMER Tanager IN SASKATCHEWAN

JACK WILKINSON, Box 155, Frontier, Saskatchewan S0N 0W0

beginners' luck seems to have been in my back when my wife, Janet, and I arrived and photographed a Summer Tanager in 1976 at Frontier, Saskatchewan. We had been bird watching for about 4 years at the time so, were relatively inexperienced. We soon determined that we had a bird on our hands and knew that photographs were our only chance of getting the sighting verified.

During spring migration, I habitually check the village park. It was on a May 7th at about 1600 that I spotted a red tanager. A check through Godfrey's "The Birds of Canada", Peterson's "A Field Guide to Western Birds" and Robbins et al's "Birds of North America" showed the only possibilities were the Summer or Hepatic Tanager since there was no black on the wings. We watched the bird with binoculars and a spotting scope and taking pictures.

Our notes made at the time included these observations which seem to be the most pertinent. The overall colouration was rosy red with grey or grey-brown present in the primaries, secondaries, and tail. The legs were brownish grey. No ear patch was present. The bill was dark, thin, rimmed with yellowish on the mandibles. Except for the thickness of the bill, the bird appeared in every respect to be a Summer Tanager.

Our next task was to find someone who would examine the pictures and, if possible, could make a positive identification. We were fortunate that the N.H.S. summer meet was held at Cypress Hills Provincial Park in Alberta. That gave us the opportunity to show some people, particularly Jim Greenwood who suggested sending the slides to Bernie Gollop in Saskatoon.



Summer Tanager

Jack Wilkinson

Dr. Gollop examined the slides and forwarded them to Earl Godfrey, then Chief, Vertebrate Zoology Division, Museum of Natural Sciences, Ottawa (now retired). The following is part of his reply of July 15, 1976:

"I have received the 24 Jack Wilkinson slides. I am always wary of identifying birds pictured in slides because cameras do lie, often with disarmingly cunning subtlety.

"However, there is really no problem in this case. Among the 24 slides there are two or three that leave no doubt in my mind that the bird shown is a Summer Tanager.



Summer Tanager

Jack Wilk

Most important, one or two slides clearly show that the bird has absolutely no cheek patch whatever, thus eliminating the Hepatic Tanager.

"The colour of the Summer Tanager's bill is definitely lighter than average in both Robbins et al and Peterson. John Crosby's bird in "The Birds of Canada" is better. Some Summer Tanagers have decidedly darker bills than those shown in the book illustrations. Your bird's bill, as shown in some of the slides where light is adequate, is within the range of individual variation for the Summer Tanager. Your slides show, depending on light, a bill varying from black to dark yellowish.

"One or two of the slides show cutting edge of the bill in enough detail to indicate that there was no 'tooth' of Hepatic Tanager proportions. In one slide the apparent projection of the cutting edge of the bill is shown under the microscope as only insect food being eaten by the bird. . ."

EDITOR'S NOTE: The letter concludes with "We owe Jack Wilk our thanks for going to the trouble of providing satisfactory documentation to permit identification of the bird. . ."

FIRST RECORD OF BLACK-LEGGED KITTIWAKE FOR ALBERTA

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In the morning of November 16, 1976 the authors identified a dead Black-legged Kittiwake brought to them by the Calgary Ornithological Society as an immature Black-legged Kittiwake. This is a species rarely seen far inland. It breeds in Alaska, extreme northern Canada and along the eastern seaboard⁴ with the most recent and northernmost colony being on Green Island of the coast of Cape Breton, Nova Scotia.³ The nearest migration route to Alberta is off the west coast of Vancouver Island, British Columbia with the vast majority of sightings in this locale being between May and September (R. W. Campbell, pers. comm.).

A review of the literature shows that Black-legged Kittiwakes are becoming seen with increasing regularity in the United States, the result of either an increase in birdwatchers or an increase in the species or a combination of both factors. Most of the sightings are from coastal states, but 15 inland states have now recorded the species. In the authors' opinions, the most unusual sightings are a single bird seen in Utah on March 12, 1967²; two birds in South Dakota in September, 1967⁵; and a single bird in Texas on October 10, 1951.¹

The following diagnostic features of the dead bird were noted: bill and feet black; tail white, slightly forked, black-tipped; underside white; head white with a dark grayish-black spot and a black nape band; mandible gray with black wing tips and a brownish-black bar diagonally crossing the wing coverts; hind toe rudimentary with no nail. Enquiring about the bird, the authors learned that the specimen was found alive by Mrs. McMurray on the road in front

of her home in Calgary, Alberta on November 13, 1976. The bird was subsequently taken to the Calgary Zoo by Mrs. McMurray where it died a few days later. The specimen has since been placed in the Provincial Museum and Archives of Alberta in Edmonton under number Z-76.129.1.

In the afternoon of November 16, 1976 the authors attended a necropsy on the bird which was performed by the veterinarian staff at the Calgary Zoo. Dissection showed the bird to be a male. While the exact cause of death could not be determined, the following facts were obtained. The bird had an old head injury in the right occipital region with traumatic lesion of the skin and underlying tissues. The gastrointestinal system was empty, except for a small piece of yellow plastic which was found in the gizzard. On top of this, pathologic diagnosis found hepatic hemorrhage, pulmonary edema and hemorrhage, and renal tubulonecrosis.

¹BAUMGARTNER, F. M. 1952. Southern Great Plains Region. Audubon Field Notes 6:25.

²BEHLE, W. H. 1973. Significant bird records from Utah. Great Basin Naturalist 33:243-245.

³FINCH, D. W. 1971. Northeastern Maritime Region. American Birds 25:834.

⁴GODFREY, W. E. 1966. The birds of Canada. Queen's Printer. Ottawa. 428 pp.

⁵HATCH, D. R. M. 1968. Northern Great Plains Region. American Birds 22:56.

LITTLE BLUE HERON IN SASKATCHEWAN

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On June 19, 1976, an adult Little Blue Heron was sighted by the authors at the north end of Last Mountain Lake. The bird was approximately 100 yards away, standing at the edge of a shallow pool just behind a dam at the mouth of Lanigan Creek. The dam was open and no water was being held within the reservoir, resulting in large mudflats with scattered pools of water.

The bird was first spotted at about 1830 and watched for about 10 minutes in full sunlight at a distance of 100 yards with a 45X spotting scope and 8x35 and 7x35 binoculars. The following description was recorded: "A small heron. Color of body, wings and tail, was slaty blue, with the neck and head showing a maroon tinge. The bill was blue and legs were slaty blue. The eye was dark. Body size similar to that of a nearby mallard." The bird's activities were minimal — resting, with a brief period of preening.

Several color slides were taken from 100 yards with a 210 mm telephoto lens, and then while

attempting to stalk the bird it flew before any more photos could be taken. It flew directly over Harris close as 10 yards and was last seen that day as it flew south along the shore of Last Mountain Lake.

The bird was on the same mudflat behind the dam the next day at 1830. It was again studied carefully with a 45X spotting scope from as close as 100 yards. Several more color slides were obtained. The bird was again flushed and flew southwest across the lake. Visits were made later in the month but the bird was not seen.

Previous observations of Little Blue Herons in Saskatchewan are as follows: The first was four seen by Joyce Gunn at Cross Spirit Lake on May 24, 1956. A single bird, seen by many observers, was present sporadically from September 9 to September 21, 1956, at Cross Lake, 16 miles south of Yorkton. There is also a 1956 report of a pair of birds, thought to be breeding, at Cross Lake.¹

¹HOUSTON, STUART. 1957. The Little Blue Heron in Saskatchewan. Blue Jay 35: 1-2.



North end, Last Mountain Lake

J. B. ...

GREATER PRAIRIE CHICKEN NEAR RUTHILDA, SASKATCHEWAN

Y. J. WAPPLE, 37 McGee Crescent, Saskatoon, Saskatchewan

A fairly recent record of the rare Greater Prairie Chicken has come to my attention. On January 14, 1976, Jim Goring described to me a bird of this species which he recalled seeing a mile north and one and one-half miles west of Ruthilda, Saskatchewan, the second or third week of July, 1972. Ruthilda is 28 miles west-northwest of Biggar. Mr. Goring is a resident of Biggar who runs a farm in the village throughout the year.

He first noticed the bird while summer-fallowing a piece of land adjacent to a stubble field. The single Greater Prairie Chicken was foraging in this field amongst a group of six Sharp-tailed Grouse. Realizing that the bird was quite unusual in its appearance, Mr. Goring was able to move within a few feet of the Prairie Chicken and observe the following field marks (without binoculars): size — about the same as the Sharp-tails; plumage — the bird had distinct barring on the upperparts, not mottled as on the Sharp-tails; tail — in contrast with the mottled, white-fringed tail of the Sharp-tails, this individual had a shorter, squarer and dark tail. This was seen much better when the birds took flight a few minutes later.

However, the most striking feature of the grouse, Mr. Goring recalled, was the two long (2 to 3 inches) tufts of feathers on each side of the neck. These were very prominent on the Greater Prairie Chicken and were, in fact, the reason Mr. Goring investigated the bird more closely. The small flock, including the Greater Prairie Chicken, remained in the same general area for several consecutive days before moving elsewhere. When asked to point out which species the bird most closely resembled in "Birds of Canada" by Godfrey, Mr. Goring pointed out the flying Greater Prairie Chicken without hesitation. He

assured me there was no mistaking the bird for any other upland game bird as he is completely familiar with the Gray Partridge and, of course, he was able to make a direct comparison with the Sharp-tailed Grouse.

This is the only record Mr. Goring remembers for this species in over 15 years of casual observations in the district.

It is perhaps interesting to note that the most recent well documented sightings for Saskatchewan have occurred during the same general period of time. Brazier reported single birds near Mortlach on December 19, 1971, and on April 16, 1972.^{1 2} Hatch examined a specimen shot near Leader on November 3, 1972.³

¹BRAZIER, FRANK. 1972. A probable Pinnated Grouse near Mortlach. Blue Jay 30:31-32.

²BRAZIER, FRANK. 1972. Greater Prairie Chicken sighted again. Blue Jay 30: 198-199.

³HATCH, D. R. M. 1973. Greater Prairie Chicken at Leader, Saskatchewan. Blue Jay 31:55-56.



Fred W. Lahrman
Greater Prairie Chicken in Wisconsin

GOLDEN EAGLE ATTEMPTS TO KILL SANDHILL CRANE

BRIAN W. JOHNS, Canadian Wildlife Service, 115 Perimeter Road, Saskatoon, Saskatchewan S7N 0X4

In October eagles congregate along the South Saskatchewan River southwest of Lacadena, Saskatchewan. There were 48 on October 17, 1974 and probably more than 50 on October 28, 1976. In 1974, 1975 and 1976, eagles were observed feeding on ducks and geese. Never had a kill by one of these birds been witnessed although D. N. Nieman watched an adult Golden Eagle stoop unsuccessfully on 12 flying Canada Geese on October 13, 1976, while flying a waterfowl survey in the area. Kuyt has observed Golden Eagles attack White-fronted Geese.²

Walkinshaw indicates "that eagles often attack cranes in Nebraska", however, Bent does not mention the Sandhill Crane as a food item of Golden Eagles.³ ¹ On October 4, 1976, I saw a Golden Eagle attempting to kill a crane adjacent to a loafing and roosting slough used by Sandhill Cranes, Mallards, White-fronted, Snow and Canada geese near Lacadena.

By 1430 I was within 0.4 km of about 3,000 cranes and 5,000 geese feeding on an oat stubble field. At 1431 all the birds began rising, milling about and landing 0.2-1.6 km away in stubble and summerfallow. While scanning the field as the birds were flushing, an immature Golden Eagle was observed on the ground 10 m from an apparently injured adult Sandhill Crane. The crane was flopping on the ground unable to stand or fly.

A strong 65 km/h wind was blowing and the eagle spread its wings, caught the wind and soared above the crane as hundreds of cranes and geese soared overhead. The eagle rose to a height of about 15 m, stooped and hit the crane lightly on the back. Then it landed and clawed, pecked and



Golden Eagle

Gary W.

flapped its wings at the crane which also flapped and stabbed back at the eagle. This fight continued for about 30 seconds before the crane tried to stand, only to fall back to the ground.

The eagle again took off but immediately landed about 70 m away from the stricken crane. It began walking and hopping towards the crane and stopped at 1437 about 64 m away. Meanwhile the crane was maintaining a low, spreadwing posture with its head down and neck outstretched. Several minutes later the eagle moved closer and paused for a minute before flying again and landing next to the crane. As the eagle alighted the crane raised its wings and with the aid of the strong wind was able to get on its feet. It flew against the wind towards the roosting slough, trailing one leg which appeared to be broken and close to the body.

the feeding cranes and geese had
ned at the eagle's last flight and
ed above it. The eagle then flush-
nd flew to the southwest through
milling and flushing birds and out
ght at 1448.

1520 the wounded crane was
ted with the spotting scope. It was
g on the slough about 45 m from
e, on ice near open water with its
gs spread. As the ice was thin, it
impossible for me to reach the

cause the initial contact between
e and crane was not observed, I

do not know whether the eagle was
preying on a wounded crane or if the
bird's injuries resulted from the
eagle's attack.

¹BENT, A. C. 1961. Life histories of North
American birds of prey. Part 1. Dover,
Inc., New York. 409 pp.

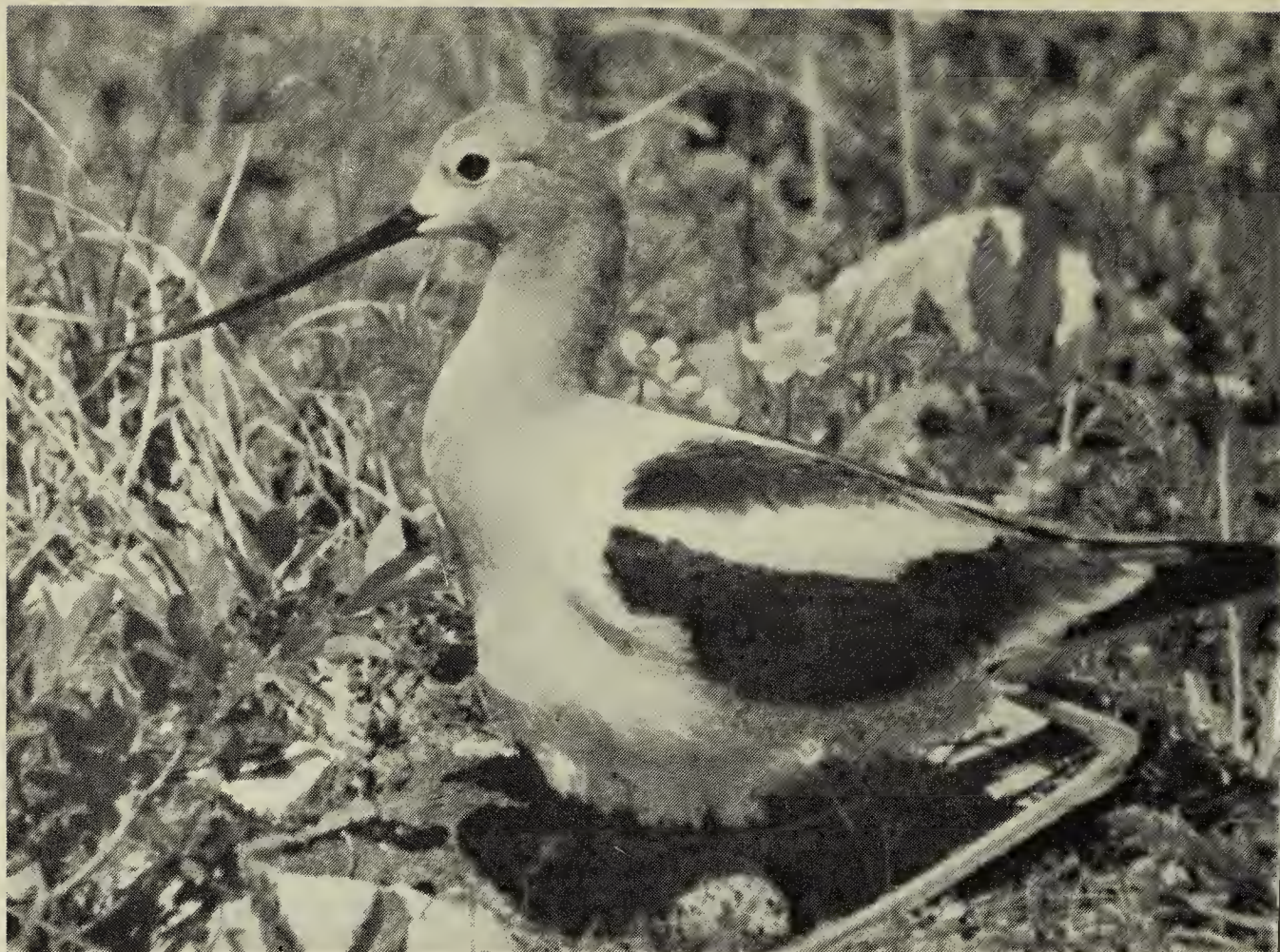
²KUYT, E. 1974. Golden Eagles attack
White-fronted Geese. Blue Jay 32:
227-228.

³WALKINSHAW, L. H. 1949. The Sandhill
Cranes. Bull. 29 Cranbrook Inst. Sci.,
Bloomfield Hills, Mich. 202 pp.



ill Cranes

Gary Anweiler



American Avocet

R. E. Ge

AN UNUSUAL AMERICAN AVOCET NEST

NORBERT G. KONDLA, Parks Planning and Design Branch, Alberta Recreation
Parks and Wildlife, 9912 - 106 Street, Edmonton, Alberta

On June 1, 1972, W. W. Smith and I explored a small island in Goosequill Lake, Alberta (30 miles SE of Red Deer). One end of this island consisted of a low, rocky spit with scant vegetation and white, salt-saturated soil. Here we found two American Avocet nests, one with seven eggs and one with eight eggs. Both clutches were comprised of two distinct types of eggs. The seven-egg clutch had three eggs different from the other four while the eight-egg clutch had four eggs different from the other four.

When we visited the island again on June 15, the nest and egg tally was substantially different. The nest of

seven eggs was the same. The egg nest was radically altered. At this location I discovered two nests of four eggs each (Fig. 1). Each "clutch" consisted of two dark toned eggs and two light toned eggs. Another nest had only a single egg. Two nests had four eggs, one with a clutch of similar eggs but the other had eggs different from the remainder. A sixth nest had five eggs, of one type and two of another.

These observations indicate that two Avocets each laid their normal complement of four eggs in a monogamous nest.^{1 2} A dispute then resulted and the eggs were divided between the two birds. It is unknown if



Norbert G. Kondla

1. Split clutch of American Avocet. Goosequill Lake, Alberta, June 15, 1972.

s rather than two birds were in-
ed. The outcome of this nest is
known.

ne observations also suggest a sur-
ng lack of nest fidelity on the part
ying females. Standard references
r to four eggs as being the normal
ch but it is not evident that all four
in an avocet nest are laid by only
bird. Gibson, in calculating the
ch size of American Avocets, ex-
ed nests with six or more eggs
n his data because he found two
nct types of eggs in such nests.²
observations reported above plus
y other avocet nests seen by
elf indicate that even four and
egg nests may be the product of
birds.

ch an unusual nest is but an ex-
ne example of highly interesting
aviour on the part of colonial
ets. Gibson's work showed that
n sexes incubate and defend
ories, although incubating birds
not leave the nest to defend the
territory from other avocets.² The
hanism by which territory is
ted in the formation of com-

posite nests is not known. Equally in-
triguing is the prospect that unpaired
females may be involved in these
nests. Gibson observed opportunistic
copulations by birds outside the pair
bond and eggs resulting from these
could well be deposited in existing
nests. Gibson also found that eight-
egg clutches had a lower hatching
success than smaller clutches. He at-
tributed this to the inability of birds to
adequately cover such clutches with
the brood patch. This lowered success
could also be at least partially explain-
ed by the four possible "parents" of
such a nest indulging in extensive
squabbling over incubation duties.
Prairie naturalists have the opportuni-
ty to make highly interesting
behavioural observations at local
colonies.

¹BENT, A. C. 1927. Life histories of North
American shore birds (Part 1). Smith-
sonian Inst. U.S. Nat. Mus. Bull. 142
(Dover edition, 1962)

²GIBSON, F. 1971. The breeding biology of
the American Avocet (*Recurvirostra
americana*) in central Oregon. Condor
73:444-454

RECORDS OF THE OLDSQUAW IN SOUTHERN MANITOBA

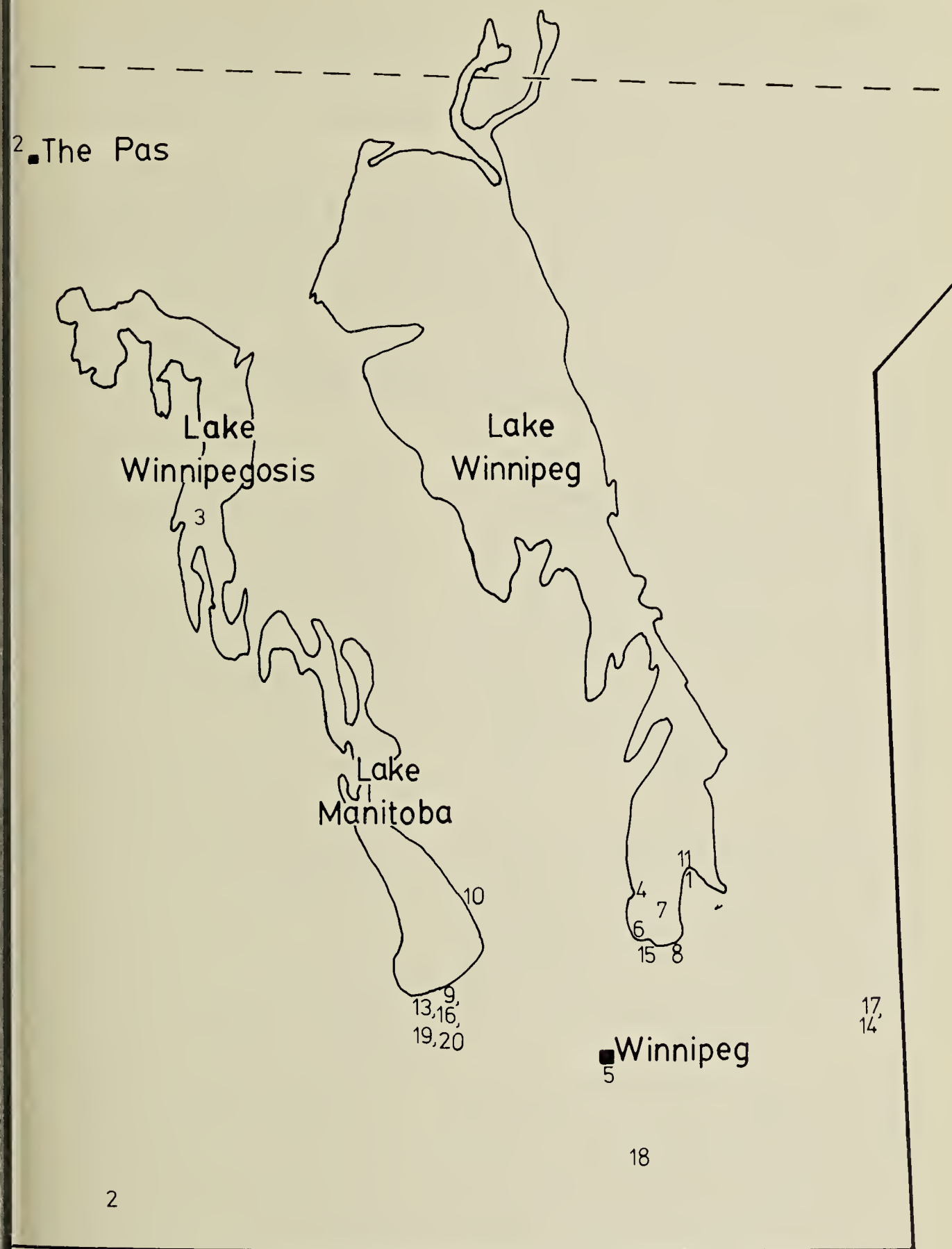
DONALD A. SEXTON and K. MICHAEL COLLINS,
Department of Zoology, University of Manitoba, Winnipeg, Manitoba

On the afternoon of November 10, 1976, we observed a female Oldsquaw at Victoria Beach, Lake Winnipeg (Fig. 1). It was swimming near the shore with a female Common Goldeneye. We identified the Oldsquaw immediately as observation conditions were excellent.

The birds were observed for several minutes until the goldeneye flushed. The Oldsquaw followed and both birds flew along the shore for several hundred metres before landing. We approached the birds again and viewed them for about one more minute. Both birds flushed once again and flew out of sight toward Elk Island (1 — numbered locations in text correspond to those in Fig. 1).

W. E. Godfrey did not record the Oldsquaw in southern Manitoba (south of 54° N. latitude), but we have accumulated several records of the Oldsquaw in this region.⁴ The earliest available record is a male shot by H. W. O. Boger at Whitehead Lake on October 19, 1899.⁶ A. G. Lawrence, in a later summary of Oldsquaw records in southern Manitoba, reports this specimen being from Whitewater Lake (2).⁹ Another specimen was shot on Lake Winnipegosis "prior to 1921" by J. P. Rosser (3). It was deposited in the Manitoba Agricultural College Museum.⁹ Lawrence documented a report by C. G. Harrold of a male Oldsquaw in breeding plumage close to the shore of Lake Winnipeg near Gimli on May 2, 1921 (4).^{6, 9} Another male Oldsquaw was observed in a flock of scaup by C. L. Borley on the Red River near St. Boniface Hospital on October 27, 1925 (5).⁸ At Matlock, in October, 1925, a male Oldsquaw was shot by Mr. Collede and reported by E. W. Darbey (6).⁹ Norris-Elye of the Manitoba Museum observed a male Oldsquaw on September 18,

1926, while travelling between C. Harbor and the mouth of the F. River on Lake Winnipeg (7).¹⁰ Another male was shot on October 1928, at Oak Point Lake near Libby by J. P. Phillip (8).¹⁰ On November 1930, an immature male was shot by G. E. Leslie at Clandeboye Bay, Lake Manitoba (9).¹¹ Also on Lake Manitoba, a male was shot "the week of September", 1932 near L. dar (10).¹² P. Gramma, a fisherman on Lake Winnipeg, found a male Oldsquaw frozen on Elk Island during winter of 1934 (11).¹³ Waller described a specimen in his collection taken by J. Reader at Reader Lake near The on September 26, 1947 (12).¹⁶ An Oldsquaw was reported at Delta on May 7, 1956, in the Delta Waterfowl Research Station Spring Migration Records (13). R. W. Sutton observed an Oldsquaw in the Whiteshell Provincial Park on May 11, 1957 (14). An immature female Oldsquaw (Manitoba Museum of Man. Nature No. 2339) was shot on October 26, 1957, at Netley by A. Sagness. Another female Oldsquaw was shot at Delta by G. S. Hochbaum (pers. comm.) in the fall of 1961 (16). H. C. shot a male Oldsquaw (MMMN 2989) on October 23, 1970, at Whiteshell Lake (17). During winter of 1971-72, a male Oldsquaw attempted to winter in open water below the dam on the Rat River near St. Malo (18). It was seen there in December, 1971, by personnel of the Manitoba Department of Renewable Resources and Transportation Services. In January, 1972, presumably this same bird was found on a new road, killed by a car. It was recovered by M. Comeau and deposited in the Manitoba Museum of Man. Nature (No. 3215). According to J. Batt, Delta Waterfowl Research Station, two juvenile male Oldsquaw



1. Locations of Oldsquaw records in southern Manitoba.

recovered in a hunter bag-
ck near Delta between October
8, 1975 (19, 20).

he Oldsquaw is a tundra nester
a circumpolar distribution.^{2 3 4}

They are common nesters along Hud-
son Bay in northern Manitoba.^{1 2 3 4 5}
In North America, this species winters
along both coasts and on the Great
Lakes.^{1 2 3 4} Some birds have been

recorded wintering on the Mississippi River and the Gulf of Mexico.²

Portions of the Churchill population migrate through the Great Lakes, with some birds wintering on Lakes Ontario and Michigan.^{1,2} Other individuals migrate to the Atlantic coast.² R. M. Alison suggests that most of the Oldsquaw wintering on Lake Ontario come from the Arctic via James Bay (pers. comm.). It is possible that some Oldsquaw migrate each year through southern Manitoba. That this species usually inhabits broad expanses of open water rather than marshes may account for the paucity of sightings. Further, much of the shoreline of Lakes Winnipeg, Manitoba, and Winnipegosis is inaccessible and observers seldom venture out on these lakes in search of birds. Fourteen of our records are from these large lakes. Since 17 are from fall or winter, it might appear that Oldsquaw migrate through southern Manitoba only in the fall. It is more likely that the preponderance of fall records reflects hunter reports of unusual birds shot.

One spring sighting was made offshore on Lake Winnipeg.⁶ This indicates that Oldsquaw may be present during spring migration, but normally beyond the range of most observers. The spring record from the Whiteshell Provincial Park also occurred in an area not frequented by many bird watchers.

R. M. Alison has received spring records of Oldsquaw up to 400 miles inland from Churchill (pers. comm.). These records were mainly from rivers draining into Hudson Bay, particularly the lower Nelson River. Oldsquaw occurred in these areas prior to the spring break-up of tundra ponds along the Arctic coast. Alison suggested that spring migration of Oldsquaw occurs over a broad front, proceeding overland from the Great Lakes (pers. comm.). Palmer states that some Oldsquaw migrate northwest from Lake Superior in the spring.¹⁵ Spring records from Whiteshell Provincial Park and Lake Winnipeg lend credence to this

hypothesis. Therefore, we feel that it is plausible that a small number of Oldsquaw migrate in both spring and fall each year through southern Manitoba.

We wish to thank the following who supplied information for this note: Bruce D. J. Batt, Maurine Comeau and George S. Hochbauer. Herbert W. R. Copland provided valuable assistance in collecting records. We benefitted from discussions with Robert M. Alison. We thank Spencer G. Sealy for reading the manuscript.

¹ALISON, R. M. 1975. Breeding biology and behavior of the Oldsquaw (*Clanohyemalis* L.). Ornithological Monographs No. 18.

²BELLROSE, F. C. 1976. Ducks, geese, and swans of North America. Stackpole Books, Harrisburg, Va. 544 pp.

³BENT, A. C. 1938. Life histories of North American wild fowl. Part 2. U.S. Mus. Bull. 130.

⁴GODFREY, W. E. 1966. The birds of Canada. Nat. Mus. Canada Bull. 137.

⁵JEHL, J. R., and B. A. SMITH. 1970. Birds of the Churchill Region, Man. Manitoba Museum of Man and Nature Special Publication No. 1.

⁶LAWRENCE, A. G. 1921. Chickadee Notes No. 6. Winnipeg Free Press. March 1921.

⁷LAWRENCE, A. G. 1921. Chickadee Notes No. 7. Winnipeg Free Press. March 12, 1921.

⁸LAWRENCE, A. G. 1925. Chickadee Notes No. 240. Winnipeg Free Press. October 29, 1925.

⁹LAWRENCE, A. G. 1925. Chickadee Notes No. 245. Winnipeg Free Press. October 3, 1925.

¹⁰LAWRENCE, A. G. 1928. Chickadee Notes No. 403. Winnipeg Free Press. December 13, 1928.

¹¹LAWRENCE, A. G. 1930. Chickadee Notes No. 505. Winnipeg Free Press. December 28, 1930.

¹²LAWRENCE, A. G. 1932. Chickadee Notes No. 604. Winnipeg Free Press. December 21, 1932.

¹³LAWRENCE, A. G. 1934. Chickadee Notes No. 675. Winnipeg Free Press. March 2, 1934.

DSSOP, H. 1957. Chickadee Notes. No. 123. Winnipeg Free Press. May 24, 1957.

LMER, R. S. (ed.) 1976. Handbook of North American birds. Volume 3.

Waterfowl. Yale University Press, New Haven. 560 pp.

¹⁶WALLER, S. 1967. Some interesting bird records from The Pas, Manitoba. Blue Jay 25: 120.

LAND RECORDS OF THE ROCK PTARMIGAN IN MANITOBA

NALD A. LARCHE, Manitoba Department of Renewable Resources and Transportation Services, Winnipeg, Manitoba, R3H 0W9 and
NCER G. SEALY, Department of Zoology, University of Manitoba, Winnipeg, Manitoba, R3T 2N2.

The Rock Ptarmigan was considered by Taverner and Sutton to be irregularly common, winter visitor at Churchill, Manitoba.¹⁰ More recently, Lumsden summarized the records of its occurrence in Manitoba and Ontario and found that it moves southward occasionally in winter or within a few kilometres of Hudson Bay and James Bay coasts.⁴ Jehl and Smith also noted that Rock Ptarmigans winter in varying numbers in the Churchill area, with major influx occurring in late fall.³ They observed the remains of Rock Ptarmigans killed by predators up to 1 km inland.

Additional records presented here indicate that Rock Ptarmigans occasionally move further inland in Manitoba than Lumsden's records show. During such years, it may be abundant but inconspicuous by association with the more common familiar Willow Ptarmigan.

On December 10, 1975, one of us (J.L.) collected three Rock and two Willow ptarmigans from the same general area, about 3 km west of Gillam and about 280 km from the Hudson Bay coast. One male Rock Ptarmigan (UMZM 450) weighed 513 g. The other male (UMZM 451) was damaged. The female Rock Ptarmigan (UMZM 452) weighed 484 g. One Willow Ptarmigan (UMZM 453), a male weighing 501 g, was preserved; the crop of the damaged second individual of unknown sex, was saved.

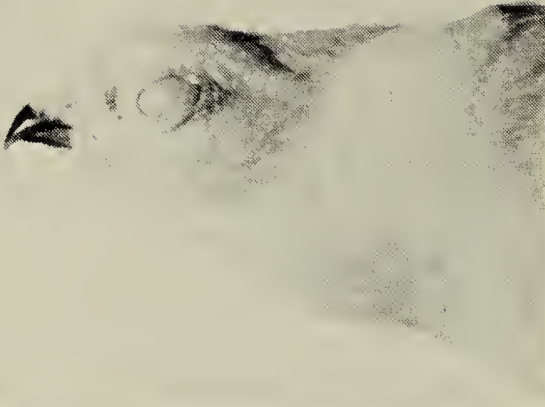
A third Rock Ptarmigan, with a black eye stripe, was seen by Larche on the same date, about 300 m from where the birds were collected. All of the preserved ptarmigans were adults, using the criteria of outer primary pigmentation to age them.^{1 12}

Much earlier, on December 15, 1928, J. T. Martin collected a Rock Ptarmigan at Gillam (Nat. Mus. Can. 50752).² Even further inland, Mowat and Lawrie reported the species near Brochet, Manitoba, on December 11 and 14, 1947.⁶ In the Lake Athabasca region of northwestern Saskatchewan, Nero presented evidence for occasional winter movements of Rock Ptarmigans there.⁷ Nero did not record them in northeastern Saskatchewan.⁸

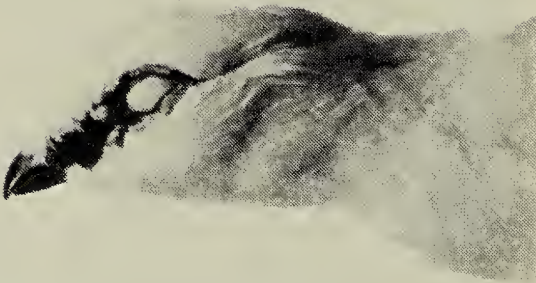
Both Willow Ptarmigan crops contained willow (*Salix spp.*) buds and twigs. Two of the Rock Ptarmigan crops contained swamp birch (*Betula glandulifera*) buds and catkins. The third Rock Ptarmigan crop contained willow buds and twigs, swamp birch catkins, sedge (*Carex spp.*) and three unknown buds. Such differences in the food habits of Willow and Rock ptarmigan, taken from the same locality near Gillam, are comparable to those found in these species in winter in Alaska.^{5 11}

Although the two ptarmigan species can usually be distinguished in the field in winter by the presence of a black eye stripe in both sexes of

A



B



C

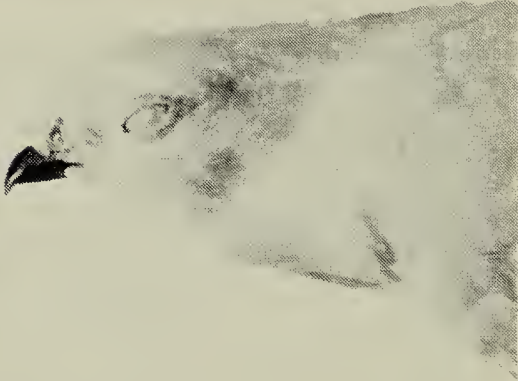


Fig. 1. Side views of male Willow Ptarmigan (A), male Rock Ptarmigan (B), and female Rock Ptarmigan (C) taken near Gillam, Manitoba. Note the absence of the black eye stripe in the female Rock Ptarmigan.

the Rock Ptarmigan, Snyder states that this stripe is lacking in about 40 percent of the females.⁸ This is the case with the female shown in Fig. 1C. It is therefore important for observers in northern Manitoba to scrutinize ptarmigans closely before positively identifying them as Willow Ptarmigan.

H. W. R. Copland kindly checked the collection of the Manitoba Museum of Man and Nature for Rock

Ptarmigan specimens. H. Oue provided the catalogue number of the specimen in the National Museums of Canada. We thank J. Shay for identifying the plant material contained in the crops. W. H. prepared the photograph.

¹BERGERUD, A. T., S. S. PETERS, and M. MCGRATH. 1963. Determining sex and age of Willow Ptarmigan in the field. J. Wildl. Mgmt. 27:700.

²HATCH, D. 1976. Chickadee notes. Winnipeg Free Press, Winnipeg, 7, 1976.

³JEHL, J. R., JR., and B. A. SMITH. 1976. Birds of the Churchill region, Man. Mus. Man and Nature, Publ. No. 1. 87 pp.

⁴LUMSDEN, H. G. 1964. The Rock Ptarmigan, *Lagopus mutus rupestris* in Ontario and Manitoba. Can. J. Nat. 78:161-167.

⁵MOSS, R. 1974. Winter diets, gut lengths and interspecific competition of Alaskan ptarmigan. Auk 91:737-741.

⁶MOWAT, F. M., and A. H. LAWRIE. 1967. Bird observations from southern Manitoba and the interior of northern Manitoba. Can. Field-Nat. 69:93-100.

⁷NERO, R. W. 1963. Birds of the Athabasca region, Saskatchewan. Nat. Hist. Soc., Spec. Publ. No. 1. 143 pp.

⁸NERO, R. W. 1967. The birds of northern Saskatchewan. Sask. Nat. Soc., Spec. Publ. No. 6. 96 pp.

⁹SNYDER, L. L. 1957. Arctic birds of Canada. University of Toronto Press, Toronto. 310 pp.

¹⁰TAVERNER, P. A., and G. M. SUTHERLAND. 1934. The birds of Churchill, Manitoba. Annals Carnegie Mus. 23:1-83.

¹¹WEEDEN, R. B. 1969. Foods of Rock Ptarmigan and Willow Ptarmigan in Central Canada with comments on interspecific competition. Auk 86:271-281.

¹²WEEDEN, R. B., and A. WATSON. 1979. Determining the age of Rock Ptarmigan in Alaska and Scotland. J. Wildl. Mgmt. 31:825-826.

SORA IN A TREE

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On July 31, 1976, while bird watching near our cottage at Hytewold, Manitoba (at the south end of Lake Winnipeg, approximately 10 miles north of Winnipeg), I observed a Sora perched on a branch of an aspen tree, approximately 18 feet above the ground. It remained motionless for several seconds and made no sound.

I understand it is rare to find this ground-feeding bird on a tree limb. I presume this bird was flushed from a brush which is about 200 yards from our cottage. Along the wedge of the brush are many bushes against a background of trees.

To confirm my observations I referred to A. C. Bent and found he had one reference to a Sora in a tree: the autumnal flight to Bermuda is even more remarkable. Major J. W.

Wedderburn (a naturalist in Bermuda) states the it (the sora) regularly visits Bermuda, arriving early in Sept. The first specimen, obtained Sept. 3, 1847, was settling on a branch of a mangrove tree — a very unusual action for this species, as it very rarely alights on a limb, and this one was four feet from the ground.¹

¹BENT, A. C. 1926. Life histories of North American marsh birds. Bull. 135. Smithsonian Inst., Washington. 392 pp.

EDITOR'S NOTE: An earlier observation of a Sora climbing and even nesting at some height was reported by Thomas E. Randall (*Blue Jay* 20:116) who found a Sora nest in 1945 at Brooks, Alberta, in the center of a willow bush and four and one-half feet above water. The nest was discovered when a Sora flew from near the top of the bush which was about seven feet tall. Although normally a ground dwelling bird on its breeding range, these two incidents indicate the versatility of the species.



-eyed grass

Gary W. Seib



Red Squirrel

Fred W. Lah

OSTEOPHAGY IN THE RED SQUIRREL

DOUG LEACH. Western College of Veterinary Medicine, Saskatoon, Saskatchewan S7N 0W0

There are many published accounts of non-carnivorous mammals, particularly rodents, eating or gnawing on bones (osteophagy). Squirrels are known to be osteophagic, and to store bones in their food caches². I observed an interesting example of osteophagic behaviour by a Red Squirrel at Williamson Park, Alberta. The park is located on the shore of Sturgeon Lake, approximately 8 km west of Valleyview, Alberta.

At 0700 on June 3, 1976, I was watching a Red Squirrel foraging in a stand of Jack Pine. I had been observing and photographing this animal for about 15 minutes when it climbed to a limb about 4 m from the ground and went directly to a bough about 1 m from the trunk. A bone was wedged in the angle formed by the limb and the bough. Squirrels have been reported to store fungi in crotches in a similar fashion¹. The squirrel picked up the bone with both forelimbs, in a manner similar to that

used to manipulate pine cones, began gnawing on it. When I moved to get a better angle for a picture the squirrel noticed me and dropped the bone.

The bone had been cleanly cut by a technique used by butchers in cutting blade steaks, and was later identified as being from the mid-section of the right scapula of an ox. The squirrel had likely obtained it from a garbage container in the area.

The storage of bones in trees would reduce the possibility of scavenging animals, such as dogs, from being attracted to and destroying caches. It would also allow the squirrel to work on the bone in relative safety, without attracting the attention of predators.

¹BURT, W. H., and R. P. GROSSENHART. 1976. A field guide to the mammals of North America. Houghton Mifflin, Boston.

²MacCLINTOCK, D. 1970. Squirrels of North America. Van Nostrand Reinhold, New York.

QUIRREL DAMAGE TO NEST BOXES

A. WILDE, Box 1196, Hinton, Alberta

People operating a line of nest boxes for bluebirds, such as the Brandon Junior Birders, have frequently noted Red Squirrels taking over the boxes, in some cases causing such minor damage as enlarging the entrance hole. I have also seen a report of porcupines climbing fence posts and chewing up nest boxes that were partly built of plywood, probably because they were after the glue.¹ However, no one seems to have reported Red Squirrels gnawing the wood to the extent of destroying a box.

I think it is of interest, therefore, to report that in the summer of 1976, Red Squirrels destroyed 12 of 100 nest boxes on the Hinton Bluebird Trail (see photo). The front and the back planks of these boxes were made of plywood and the rest of flakeboard. The flakeboard was not affected, but the plywood was gnawed to the extent that the box was no longer useful. There were several other instances where the entrance hole was enlarged, but in those cases the boxes were still habitable. All the boxes damaged were adjacent to Lodgepole Pine stands where Red Squirrels were present, but none of the boxes show-



Damaged nest boxes

G. A. Wilde

ed any evidence of being occupied by squirrels. I believe that the glue in the plywood must have attracted them, and I recommend that anyone considering a nest box trail in forested lands should avoid areas of Red Squirrel habitation and the use of plywood in constructing nest boxes.

¹LANE, JOHN, and RANDY BAUMAN. 1972. Twelfth annual nestbox report of Brandon Junior Birders. Blue Jay 30: 226-227.



Squirrel

Larry A. Morgotch

AN INTERESTING CONCRETION

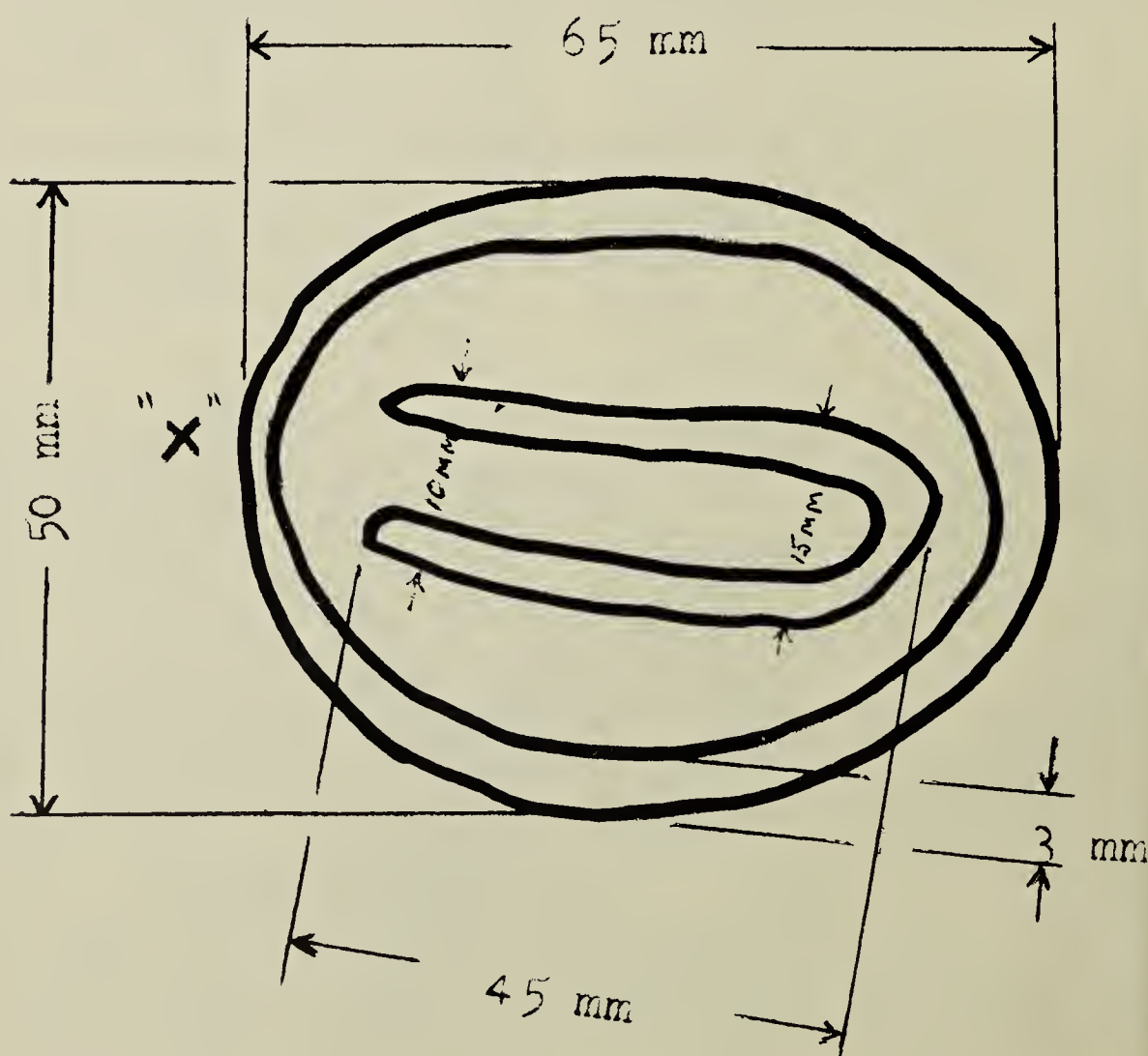
A. J. HRUSKA, Gerald, Saskatchewan S0A 1B0

The usual description of a concretion as having concentric internal structure does not appear to fit the concretion which is the subject of this note. I picked up this specimen in the field several years ago because of its very interesting configuration, which can be seen in the accompanying photo.

The rock is approximately 9 cm high, 15 cm long, and 6.5 cm thick. It is roughly trifacial and the bottom is covered with a heavy patina of lime. The material is a dark grey sediment and is usually referred to as greywacke or ironstone on the prairies. A similar illustration can be found in *Concretions and some other Sedimentary Structures*.

The chief interest of this concretion is the design which appears to be incised or eroded into the rock at a uniform depth, except where marked "X". Though the outside design is circular the inside "hairpin" design casts doubt on its being a concretion since this is a design inside a design. Further, the two different angles of incision are very interesting. The outside ring which is quite uniform is incised at about 50° to the plane of the rock, whereas the hairpin incision is perpendicular to the same plane. Both incisions are to the same depth except where indicated, and are about 3 mm wide.

In my opinion the difference in angles of incision or erosion





cretion

A. Kallio

signs are very interesting. I would like to call it a regular concretion as illustrated in *Blue Jay*, September 1973.

Because the origin of concretions is unclear I would like to think that my

illustrated specimen is a sedimentary rock with an impression cast into it some eons ago, and not deposited in the generally accepted manner. Could it be the hoof print of some ancient animal?



lebee

J. B. Gollop

THE NATURALIST ON HORSEBACK

E. OTTO HOHN, Department of Physiology, University of Alberta, Edmonton

If you are both an enthusiastic wildlife observer and a horseman you will sooner or later want to enjoy both activities simultaneously — can it be done? The short and practical answer is — not very well — but that is putting it in a nutshell. There are a number of considerations and qualifications.

If you are prepared to look at birds and the larger mammals with the naked eye, you can do that almost as well from the saddle as on foot. But the use of binoculars is tricky, because no horse, in my admittedly limited experience, ever stands still for as long as you may wish it to. You can stop it from moving on, easily enough, but you can't reduce it to total immobility; and this, an absolute requisite for a satisfactory look with binoculars, imposes a fundamental limit on the combination of riding with bird or mammal watching in the ordinary sense. However, riding and spotting without binoculars can be satisfactory to the extent that in a familiar bit of country you can identify most birds and large mammals by their naked-eye appearance. Some of your bird identifications, based on glimpses and hearing songs or calls, may however be probabilities based on knowing what to expect in each habitat, rather than certainties.

As an adjunct to naked-eye bird watching, riding has evident advantages over walking. You can let the horse do the rough and tiring work of wading through mud and rough vegetation as well as climbing up hill and down dale, and if it is useful in marshes as well. In 1937 I spent some months about a large marsh in the pampas of Argentina. The local horses, bred on the marshes, would wade without hesitation in the mudflats, which had amazingly firm bottoms, to any depth short of the horses' chests, which would have forced them to swim. Here birding on horseback was preferable to the alternatives of wading or the labor of pushing a boat through the dense stands of tall reeds and rushes. To see grebes, cormorants, and limpkins, and to peer into the nests or those of everglade kites from the saddle was a rare experience. I was not convinced that birds would allow me to approach them closer on horseback than on foot. This may seem to contradict the late 19th and early 20th century British naturalists' use of the stalking horse in the Coto Donar in southern Spain, for goose shooting at the turn of the century. But I believe he walked behind a horse and did not ride it, and it is quite conceivable that some birds are so used to grazing horses that they will accept a close



Breaking horses

E. Otto Hohn



ed-up for an overnight collecting trip

E. Otto Hohn

reach by these before flushing
they will by a man mounted or
t.

collecting is perhaps nowadays not
of bird watching for many; but as
ysiologist needing samples of en-
ine glands of certain birds, I have
occasion to do it using horses. I
t know whether cavalry armed
carbines always dismounted to
ot, but I've always been warned
to shoot from horseback but to
instead of a few yards away from
horse. One of the horses at my
osal in Argentina was excellent
his sort of work — I was collecting
ted snipe. I would ride him over
flooded pastures until we flushed
of the birds, dismount and walk
o a snipe where I'd marked its
ent after its usually short flight.
ers were generally close by. The
e set to grazing as soon as I
oped the reins and he stayed
re he was until I was ready to
e on. Not so with a mare I was
loaned for work in this marsh —
slowly took off for home after I
ounted and was busy. Fortunately
n intervening fence stopped her
n really getting away on me.

Though I shot dismounted, the
horse was a great asset in this
collecting for it saved me a lot of
walking over grassland under a few
inches of water to get to the general
area where the snipe were, and
within that area to get from one
group of birds to another.

So much for naked-eye bird
watching and collecting with the help
of a horse.

It is when one tries to use
binoculars in the saddle that
problems really arise. I imagine most
people will feel like myself — that
when a bird is sighted there is
generally not enough time to ex-
tricate the binoculars from their case
and that they should therefore be
carried at the ready. If you do this on
horseback you will find that the neck
straps are of such a length that the
binoculars hang too low and are
cruelly bumped about by the saddle
bow during a trot or canter. You have
to shorten the straps so that you can
only just swing the binoculars clear of
your chin when you bring them up to
your eyes. Even then you will want to
steady them when the horse is in any

of its faster gaits by clamping them under one arm, holding them in one hand or pushing them down the front of a tightly-buttoned jacket or wind-breaker.

With these precautions the binoculars will stay pretty close to where you want them whatever (short of jumping, which I've not tried with binoculars) you make the horse do. The great flaw, however, as I've already remarked, is that no horse with which I have had experience can be relied upon to stand absolutely still for more than a very few seconds so that satisfactory views through binoculars, though possible, are rare. Of course, you can get such a view by dismounting, but one is always reluctant to do this from sheer laziness and because a strange horse cannot always be relied upon to stay in place when the bridle is allowed to hang, as western-trained horses are supposed to; nor will it necessarily follow readi-

ly wherever you may try to lead it in order to get a good view of your bi

Most of these difficulties are minimal with a horse with which one has become familiar and perhaps, but I've not yet experienced this, they could be nearly abolished by training it very carefully and patiently.

A last point: if like myself you are apt to let your thoughts wander whenever your body is temporarily out of some steady state, don't ever let your mind become completely absorbed in your inner world when you are in the saddle. Any horse with some spirit is liable to make a surprise move at any time. For example, one of my Argentine mounts, after carrying me calmly through paths that ran among serrated masses of five-foot high thistles, where we were happily cantering over rough pasture suddenly shied at a single clump of thistles out in the open.



Killdeer settling on eggs

R. E. Geary

KEEPING SASKATCHEWAN NEST RECORDS — A SUMMER PASTIME

GABRIEL CARLSON, 46 Britnell Crescent, Saskatoon, Saskatchewan S7H 3X8

Two years ago I started keeping nest records for the Prairie Nest Records Scheme. This worked out very well since I like to take long walks in the deep woods in summer. Most of my observations were carried out along a 3-mile strip of land adjacent to Turtle Lake, 70 miles north of North Battleford. It is 27 miles long, straddling the park belt on the south side being engulfed in boreal forest on the northern half. I live on a peninsula near the middle and so enjoy the flora and fauna of both.

My first summer of searching was eventful except for the day we encountered a family of baby Wilson's Ptarmigan. We studied them briefly, noting that they appeared to move a lot faster than the baby Killdeer that we see there every summer.

In 1976 we captured the young in four nests of Spotted Sandpeppers. Since none of these birds remains on the nest for more than a few hours after hatching, a watcher must be patient as well as persevering to see them at all. We found all four nests while they still contained the four large blotched eggs, and then carefully kept tab on them without disclosing their whereabouts to people or predators.

These fluffy little bundles of energy are a delight to behold. We noted that they do not seem to follow a set pattern for leaving the nest. Nest #1 hatched on June 16. The first three chicks hatched hours ahead of the last, all remained in the nest until the mother was ready to go. Nest #2 presumably hatched early in the morning for the nest was vacant by 10:00, June 27. Nest #3 hatched between 0900-1000 July 4, and the mother left the nest before noon. Nest #4 hatched early in the morning of July 14; the young stayed in the nest

until afternoon and returned in the evening. We observed them under the mother in the nest at 1700. Nests 2, 3 and 4 were all within 30 feet of the water. We were able to observe them on the deserted beach in early evening being taught by the mother. One *CHEEP* and they all ran for cover.

Most of the other nests were fairly easy to identify; however, some presented a challenge. One baby Red-tailed Hawk near Asquith was positively identified by Mary and Stuart Houston on June 29 when they came to band it.

The dozens of swallows we kept tab on along the lake were of four species: Barn, Tree, Bank and Cliff. Eastern Phoebe occupied ledges and eaves of buildings about 150 feet apart along the lakefront. Every successful nesting pair renested. The second nests contained only four eggs, not the six or seven of first nests. One nest fell from its perch following a violent rainstorm. All babies died. Humans destroyed three other nests, and the adults apparently abandoned one with partly grown young.

Robins were prolific in 1976. They nested on the "Point" in the birch and spruce trees for the first time since 1970. They also used light fixtures, ledges and a power transformer. House Wrens had a banner year both in numbers and ingenuity of homesites. We found six nests in wren houses, one in an abandoned gas pump, one in the loose siding of an unfinished cottage, another in the broken signal light of an old bus, and the last in the elbow of a fork lift of a front-end loader. Since the owner didn't share my love of birds, this brood survived only three days.

Identifying the nests is only part of the fun. I spent many futile hours

looking for nests of Connecticut Warbler, oriole and Yellow-rumped Warbler, all within 200 feet of my cottage. Following is a partial list of the 18 species and over 110 nests that I recorded during the summer: Near Asquith: Clay-colored Sparrow (two nests; each contained a cowbird's egg. One nest destroyed.) Mountain Bluebird, Red-winged Blackbird, Vesper Sparrow (five fledged July 12), Savannah Sparrow. Catbird at Semans, in a lilac hedge; four young July 17. The remainder were all from Turtle Lake: Yellow-shafted Flicker, Yellow-bellied Sapsucker, Slate-colored Junco, Ruffed Grouse, Robin, House Wren, Barn Swallow, Cliff Swallow and Bank Swallow.

One nest, however, was to require almost five months to positively identify. I found it while picking strawberries in a meadow near the lake. The female flew from under the leaves of a dandelion. Her nest, mostly of woven grass, contained four eggs. They were greenish-white, sprinkled with spots and blotches of brown and lavender. The bird resembled a sparrow, similar in color, etc., but had only a few streaks on the breast. Its tail seemed a bit more prominent (white edge) than a sparrow's. I deleted the Lark Bunting from the list of possibles when I reread the egg description of that species — unmarked. Perhaps I noted the wrong details but, then I never saw the male. For 12 days I visited the site cautiously, coming from all directions and at all times of day. I only saw the bird again four times and then only for an instant. It disappeared into the clover and grass clumps within seconds of flying up. Many other species of songbirds seemed to be nesting within a short distance of MY bird. Their songs made it even more difficult to identify her.

On day 13, two eggs hatched, then the third on day 14. The fourth egg did not hatch, so I took it home for future reference. The following week the three young were almost ready to fly, and when I next visited the nest one was left behind. It had died. I wrapped it in a dandelion leaf and put

it in my freezer until I returned Saskatoon.

Once home I contacted Slimmon, who is considered to have one of the best collections of egg prairie birds. He and I checked the egg against all of the other sparrow eggs as well as a number of other similar species. They all proved negative. We listened to recordings of 20 or more birds only to conclude that we still had not found the right one. I took the bird up to the University for some help. Dr. Maher promised to examine it and compare it with some other references. However, disaster hit the deepfreeze one weekend; it stopped working, so everything had to be thrown out. End of the road.

Our Oct. 1 deadline for mailing the nesting record cards came and I mailed in all of the others. I never have discovered what my bird was but had I not ordered a copy of the newly updated "Birds of Alberta" by Salt & Salt. When I opened it a small piece of paper fell out. It was marked "errata" and stated that the titles for Snow Bunting and Chestnut-collared Longspur were transposed. I returned the paper to its place and decided to read about the Chestnut-collared Longspur, just to compare it to Godfrey's "Birds of Canada" which had been my most used guide.

The description of the eggs seemed familiar, as did the nest, but under "remarks" the description of the bird's habits left no doubt. It was the bird.

I telephoned Jim Slimmon with the news and asked him to double check. He called back to inform me it was correct. It was indeed the egg of a Chestnut-collared Longspur. Because all of my bird books showed it to be a resident of the prairie around Edmonton and near Saskatoon, I had never looked for it 125 miles north. I will now close the page on 1976. A chapter counted for. Thanks to J. B. Godfrey, A. Slimmon and W. J. Maher for their assistance. I intend to keep working more and, hopefully, better records in 1977.

WILDFLOWERS ACROSS THE PRAIRIES

R. VANCE, J. R. JOWSEY and J. S. McLEAN. 1977. Western Producer Prairie Books, Saskatoon, Saskatchewan. 214 pp. \$8.95 paperback, \$14.95 hardcover.

This highly attractive volume presents a welcome addition to available information resources, especially for nonprofessionals, on the natural history of the Canadian prairies. The excellent color photographs of many of the more common and conspicuous wildflowers of this region should stimulate many even casual readers to new or renewed interest in nature around them. Hopefully such increased awareness of nature will trigger a greater appreciation on the part of many more persons of the value of conserving natural areas with their contained wild flowers and other wildlife. While this book includes no identification guides or keys except for an appended color index, the colored reproductions are realistic and clear enough to allow for visual field identification of many wild flower species even by nature-lovers with little or no botanical training or experience.

In this book, 186 wildflower species are fully described and pictured, each on a separate page, and 75 additional related species are pictured and referred to in a brief text sentence contrasting their distribution or some distinguishing features, for an overall total of about 170 species featured. The volume does not, nor does it purport to, cover all naturally occurring species of flowering plants on the grasslands and forest edges of the Canadian Prairie provinces and the adjacent Great Plains states. About 200 species of flowering plants are included by Budd and Best (*Wild Plants of the Canadian Prairies*, 1964); thus, the present publication describes less than 16% and pictures less than 25% of these, so readers should not assume that it fully covers the entire flora. This is certainly not

intended as a critical comment since the publication is far more inclusive than are most such illustrated wild flower books.

The truly outstanding feature of this book, in my opinion, is the colored photography, primarily by Fenton R. Vance, but also including contributions from various other members of the Saskatchewan Natural History Society. Most of these photographs show a remarkable clarity of floral details and near-natural coloration. Simultaneously the publishers must be complimented for their unusually excellent reproductions of these photographs in the book copies, retaining the clarity and natural coloration of the originals. Nevertheless, a few reproductions in my copy do show some potentially misleading flower color distortions which should be noted by readers: p. 15 (lower left) too red rather than orange-red; p. 94 (top left) too pinkish rather than blue; p. 141 (top) overly blue rather than purplish or pinkish; p. 143 (top) not blue enough; p. 155 (top) abnormally bluish rather than pinkish-white; p. 170 (top left) overly pinkish rather than more blue.

While good, well-reproduced color photographs are probably the best way to convey the impression of the living plants as they actually occur in nature, there are certain persistent problems with the use of photographs rather than drawings for illustrating plants. These problems include: (1) the limited camera depth of field which normally does not allow for a sharp focussing on all diagnostically important plant parts (e.g. foliage characteristics unclear when the flowers are the objects of focus, and actual interconnections between plant parts often obscure), (2) a morass of overlying plant parts which may hide taxonomically important characters, (3) parts of closely associated plant species which may not appear separate, and (4) confusing size distortions which may be apparent. While the present authors have succeeded much better than most in overcoming these common difficulties (especially the first), all do



Western Red Lily

Fenton R. Var

remain at least to some degree. It would have been desirable if the authors had inserted a measurement scale with each picture to allow for size estimates. Although the text does include detailed measurements for the described species, there are many inserted photographs of species which are not so described. Readers may encounter some confusion in knowing for certain which foliage belongs to the species in question, for example, in the photographs of white water crowfoot (top, p. 49), western Canada violet (bottom, p. 97), and twin flower (bottom, p. 155).

Supplementary line drawings can be used effectively to clarify or amplify details of plants not readily shown on photographs, and this the authors have judiciously attempted to do. However, in marked contrast to

the photographs, I find the line drawings in this book a considerable disappointment. Most of the drawings are really not very enlightening in regard to a better clarification of the floral structure, often showing even less detail than do the photographs. The diagnostically important number and nature of the stamens and pistils are often omitted or very unclearly shown, and even petal and sepal shapes, positions, and fusions are often distorted. In some cases I believe the line drawings to be potentially misleading to readers, such as those on pages 29, 34, 36, 46, 51, 55, 56, 57, 70, 71, 79, 84, 93, 110, 147, 148, 158, and 160. The drawing of "western dock" (p. 34) shows strongly toothed fruiting perianth valves (seeds as here called) which are more

ely those of "field dock", *Rumex*
nophyllus.

The authors should be congratulated for the well-presented format, combining on a single page the excellent color photographs of the wild flower species with the concise, informative, and easily readable textual descriptions and comments. A reasonable attempt seems to have been made to simplify botanical terminology, but without going to the extreme too often seen in layman-level natural history books where oversimplification has been accompanied by a serious loss of accuracy and precision. Instead a useful glossary of terms has been appended (p. 196-198), which is supplemented by labelled figure drawings (pp. 3-7) of leaf, inflorescence, and flower details and features reprinted from Todd and Best (1964). Unfortunately, some of the glossary definitions appear inadequate, misleading, or even in error, including those for the following terms: barb, carpel, hip, lobe, oblanceolate, ovary, panicle, pedicel, pome, and trifoliate. For the most part the actual species descriptions have been very well done, although a few errors were noticed — for example there are far more than 3 or 4 sepals (= simple pistils) in the ciliate flowers of arrowhead (p. 10).

With the species descriptions, short comments are included on habitats, general distribution in the area, abundance, and phenology. Also various interesting notes have at times been inserted concerning plant usages (e.g. edibility, tea or wine production, etc.), poisonous attributes, aesthetic qualities, name histories, etc., which should serve to whet many readers' appetites for more knowledge about these wild flowers. An indication of species' rarity or threatened survival has sometimes been given also, along with a conservationist's exhortation "to enjoy and not destroy." However, except for orchids, relatively few of our endangered flowering plant species have been included in this book. In regard to the text format, the reader should note that anywhere within a

species description, a brief contrasting sentence about another related species may have been inserted, but that the continuing description still refers to the original species and not to the inserted one. Also the most prominent photograph on a page may not necessarily be of the described species, but of a related one referred to briefly in the text.

Certain distribution statements given by the authors seem questionable. To my knowledge, *Cypripedium reginae* (p. 27) has never been verified for Saskatchewan, either past or present; *Spiranthes cernua* (p. 29) is recorded no nearer to the Canadian prairies than southeastern North Dakota; *Habenaria orbiculata* (p. 28) is hardly considered common in aspen parkland edges and the boreal forest; and the butterwort species (p. 151) occurring in the Cypress Hills and on the prairies has been considered to be *Pinguicula vulgaris*, with *P. macroceras* limited to the southwestern Alberta foothills. Also I would question that certain species are as wide-ranging or apparently frequent as indicated by the authors — for example "lady's thumb" (p. 33; also the identification of photograph seems questionable), "purple clematis" (p. 45), "wild white geranium" (p. 88), "fringed gentians" (p. 130), "dwarf bilberry" (p. 124), "showy milkweed" (p. 133), "scarlet paintbrush" (p. 146; also the top photograph seems more likely to be the "red Indian paintbrush"), "heart-leaved arnica" (p. 169), and *Hymenoxys richardsonii* (p. 185). On the other hand certain species have a wider distribution or frequency than apparently ascribed by the authors, including "cream-colored vetchling" (p. 78), which appears almost equally common eastward, "silverberry" (p. 101), which becomes even more frequent northward, "red Indian paintbrush" (p. 146) which is our most wide-spread paintbrush species and not limited to the Cypress Hills, and "Canada goldenrod" (p. 193), which seems equally as abundant westward as eastward.

There are a few questionable identifications of the plants pictured, although verification of such determinations from photographs alone is often difficult. The photograph labelled "hedge bindweed" (top, p. 134) appears more likely to be "field bindweed" (*Convolvulus arvensis*), and why is the lower right photograph labelled "wild morning glory", another name for the same species, *C. sepium*, as "hedge bindweed"? The taxon represented by the photographed plant called *Castilleja acuminata* (lower right, p. 146) seems uncertain, but perhaps it is the white-inflorescence form of *C. coccinea*. Other questionable identifications include the following: "smooth fleabane" (lower left, p. 179) which could well be "rough fleabane", *Erigeron asper*, instead; "thin-leaved snowberry" (top right, p. 156) which at the least is certainly atypical with such coarsely toothed leaves; and "silvery groundsel", *Senecio canus* (lower right, p. 191) where the grayish leaves at the base uncertainly belong to this plant.

While I have attempted to point out some of the various technical flaws for the readers' benefit, these are indeed relatively minor and do not detract substantially from the overall impressive quality of this volume. The book is well-edited with few spelling and grammatical errors noted. Its 5½" x 8½" dimensions should make for handy field use, although the binding of the paperback edition seems unlikely to hold up well under rough usage. In conclusion, I would highly recommend the book for anyone with an interest in the prairie flora or general natural history, and equally for all levels, from elementary school children to adults, and from inexperienced nature-lovers to professional botanists. The price is surprisingly low when one considers that there are several color reproductions on almost every page. Can any prairie naturalist afford not to obtain a copy of this book? — Vernon L. Harms, Fraser Herbarium, University of Saskatchewan, Saskatoon.

CRIDDLE — DE — DIDDLE — ENSIS

ALMA CRIDDLE. 1973. Published by Alma Criddle, 19 - 303 Furby St., Winnipeg, Man. R3C 2A8. 288 pp. \$8.00

In my youth, I heard the Criddle name mentioned in tones of awe by such people as Mrs. Priestly and A. Lawrence. Later, I read many important contributions to natural history written by Norman and Stuart Criddle. I was therefore overjoyed to learn that a book-length biography of the Criddle family had been published.

Percy Criddle settled near the Assiniboine River, 25 miles south of Brandon, in 1882. At 38 years of age, like many other pioneers, he knew almost nothing about farming. Fortunately, he was strong; and Percy walked 50 miles to and from Brandon in just over 15 hours.

Percy brought from England a legal wife and four young children between two and seven years, and a former mistress and their five children between eight and 13 years. The two families formed one menage, the children totally unaware of the blood relationship until many years later. Percy's two women and three children represented many mouths to feed but also a potential labour force which he used to advantage.

Few pioneers kept such a comprehensive diary, and perhaps no other family had such an interesting story to tell. Percy was a man of many accomplishments and wide interests, educated at Heidelberg University, the son of accomplished artists, and was himself well-trained in music, a talented organist with a fine tenor voice. Percy became the local Justice of the Peace and Game Guardian. He also served as the local expert in fields as diverse as astronomy, natural history, law, medicine, music and sport.

The Criddles built a cricket pitch, four grass tennis courts, a nine-hole



Criddle Home, Aweme, Manitoba

John Lane

course, a skating rink and a loggan slide on their farm, and cy encouraged his children in sports. Stuart and Talbot once achieved headlines in Winnipeg newspapers for their unexpected prowess in a provincial tennis tournament, where these farm lads "put Treesbank on the map." Talbot was still able to win the Western Manitoba singles tennis championship when 60. Maida once won a ladies' golf match using a single rowed club, and another time she defeated the lady champion from Winnipeg.

Although Percy was the dominant pool trustee for nearby Aweme Pool for all of its 32 years, he did allow one of his children to attend school. His wife, Alice, taught him all at home.

Indeed, Alice Criddle, who married Percy before she learned of the misdeeds and her five children, is the "ungiving heroine" of the Criddle story. Ma Criddle, Talbot's daughter and Percy's granddaughter, gives us a sense of "the strength of character, the firmness of spirit, the fortitude and ingenuity . . . (the) self-discipline, patience and stamina" of this diminutive but remarkable cheer woman. Alice had the rare advantage of a University education, was fluent in several languages and well versed in literature and natural

history. She was the gracious hostess at "St. Alban's", which became the cultural and sport centre for miles around.

Alice taught her children well and they became careful observers. Evelyn became an expert meteorologist and weed inspector. Stuart became a taxidermist, a breeder of lilies, sunflowers and corn, and a mammalogist of continental repute, who published important life history studies of prairie mammals. But it was Norman Criddle who made the greatest contributions to natural history.

At the age of five in England, Norman first collected caterpillars for his mother and learned which butterflies resulted. He began to help his father collect butterflies in a serious way at Aweme at age eight. In 1901, Norman developed a method of combatting the grasshopper scourge, using a mixture of Paris Green, salt and manure or sawdust, spread around the edges of grain fields. The Dominion Department of Agriculture promoted this "Criddle mixture" throughout the west.

Next, Norman collaborated with Dr. Fletcher of the same department to produce the watercolour paintings for Dr. Fletcher's book, *Farm Weeds of Canada*, and then for *Fodder and*

Pasture Plants. In 1913, Norman was appointed entomologist to the Canadian government and they soon built him a laboratory on the Criddle farm. Norman published 125 papers about birds, mammals, flowers and especially insects, and studied the life cycle of more than 70 species of grasshopper. He had "remarkable biological judgement which was controlled by study and guided by a great breadth of mind nurtured upon wide and thoughtful reading in science, literature and art." No less an authority than Hoyes Lloyd stated in his obituary that "Canada in losing him has lost her best field-naturalist."

The entire family had an affinity for nature. Chickadees came and ate from their hands, and the book includes a photo of redpolls swarming over Maida. Percy's diaries recorded some firsts, including the first raccoon for the area in 1883 and the first house sparrow in 1897. However, this book tells us much more about the Criddles themselves than about their observations.

Additional research might have corrected a few omissions and errors. Although his knowledge of Canadian birds was decidedly limited, Percy began sending migration dates to Washington in 1884, a fact omitted from this book. Norman was an Associate of the American Ornithologists' Union, not a counsellor and Past President, an error which was copied from his obituary in the *Canadian Entomologist*.

We owe Alma Criddle a debt of gratitude for her skillful use of Percy and Norman Criddle's diaries as the main source of material for this book. Carol Scott provided the initial encouragement for writing it, and the surviving members of the family contributed their reminiscences.

The unusual title of the book, *Criddle-de-diddle-enis*, is explained in chapter 19. In 1883, Percy Criddle was visited by English naturalist and author R. Miller Christy, and his young friend Ernest E. Thompson (Seton). These men admired Percy's already creditable butterfly collec-

tion. After their departure, Percy humourously recorded in his diary that his "new friends anticipated brilliant future and immortality, owing to my possible discovery of some new insect or other in this unexplored district which will be of course called Criddle-de-diddle-enis or some other fancy family name."

This interesting book may be obtained through the Blue Jay Bookshop, Box 1121, Regina. —C. Houston, 863 University Dr., Saskatoon, Saskatchewan S7J 0J8.

THE AMERICAN ROBIN

A Backyard Institution

LEN EISERER, with line drawings by Martha R. Hall. 1976. Nelson Hall Publishers, 325 W. Jackson Blvd., Chicago 60606. 165 pp. \$12.50 US.

This book is a readable description of the life style and natural history of the American Robin. The feeling of the author and others who strive to live in harmony with the natural world is well expressed in the dedication, "To Robins everywhere, may they continue to prosper beyond the human reckoning of time, and California Condors, that they may forgive us for what we have done."

Under the heading "Hey, Wait! That a Robin?" Chapter 1 describes the range of the robin's contact with human beings in North America at various times of the year and at various geographical locations. The following chapters treat differences between the six races of robins, migration to nesting areas, and stages of the life cycle, again with special reference to contact with human beings and their "nests" or "territories".

The diet of robins is discussed in detail, with particular regard to variations at different times of the year and stages of maturity of fledglings. The fact that robins cultivate fruit is discussed separately without accepting all the claims of crop damage that are made.

The discussion of robin behaviour includes group roosting, territorial tolerance on feeding grounds, changes of behaviour at different seasons of the year and overwintering. The care of injured birds is treated briefly.

The author's clear style, not burdened with excessive detail, makes his book readable from Grade level up. His reference to studies of the natural history of robins inspire the reader's confidence. There are several colour photographs of robins — nestlings, juveniles and adults — these are excellent. But the use of

very wide margins in the text seems a waste of paper hardly in keeping with thrift in use of natural resources.

By its general tone, this book emphasizes the sacredness of life and the fragility of the relationship between human beings and the wild animals which we meet at close range. It repeatedly conveys the thought expressed in the final chapter in the description of a young robin shot by a boy with an air rifle, "A little lame Robin who lived in the hands of human compassion but died at the hands of human callosity." — J. R. Jowsey, 2635 - 19th Ave., Regina, Saskatchewan S4T 1X2



Robin

Fred W. Lahrman

AVAILABLE FOR YOUR INFORMATION . . .

NO TRESPASSING — the proceedings of a seminar held by the Conservation Council of Ontario on the problems of public access to private land. The page booklet is available from the Council office at 45 Charles Street East, Toronto, Ontario M4Y 1S2, for \$50.

YOU AND PESTICIDE USE — a new pamphlet available from the Plant Industry Branch, Saskatchewan Department of Agriculture, Room 101, Administration Building, Regina S4S 0B1.

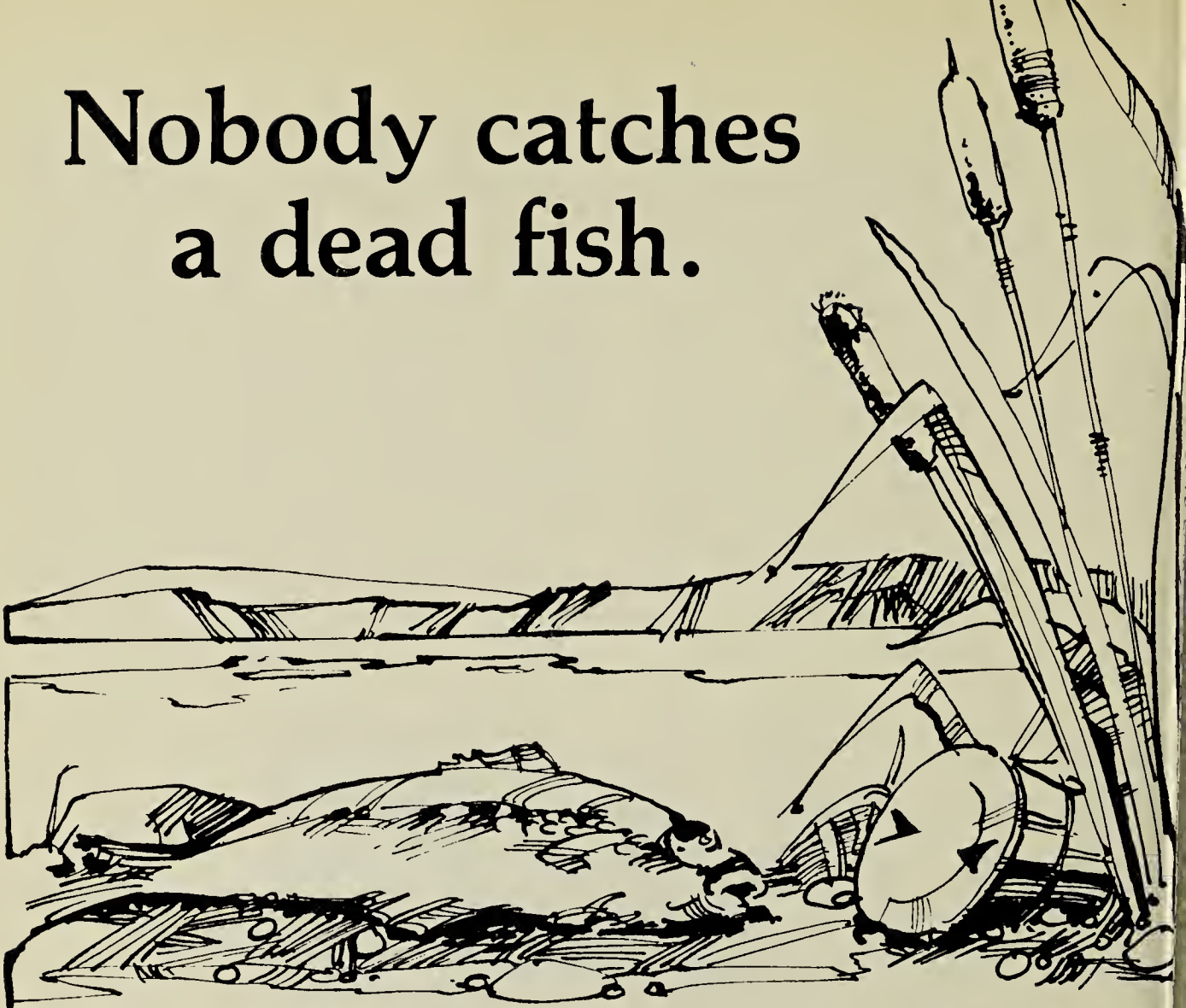
ENVIRONMENTAL ADVISORY COUNCIL 1976 ANNUAL REPORT —

a 21 page report outlining the activities of the Council during the past year. Available from the Council at Sub P.O. Box 40, Regina, Saskatchewan.

THE RECLAMATION STORY — a glossy, 12 page brochure that tells the story of the Saskatchewan Power Corporation's efforts at reclaiming strip mined land in the Estevan area. Available from SPC Head Office, Regina, Saskatchewan.

LAND FOR WILDLIFE AND PEOPLE — an attractive brochure that introduces Manitoba's Wildlife Management Areas. Available from the Department of Renewable Resources and Transportation Services, Box 22, 1495 St. James Street, Winnipeg, Manitoba R3H 0W9.

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**Environment
Saskatchewan**

NERO TRIBUTE

It was with great interest that I read the tribute in the recent *Blue Jay* thanking Bob Nero for his many contributions to the Saskatchewan Natural History Society on the occasion of his resignation from the editorial staff of the *Blue Jay*.

While I echo the sentiments expressed in the article, I feel it missed commenting on one of his most important contributions to the fostering of natural history in the prairie region, a contribution that affected me directly. I refer to the support and encouragement that Bob has consistently given to young people who had a strong interest in natural history, but who required a certain degree of help and direction. Bob was never too busy to talk to, or correspond with, such "high-school naturalists" and provided many of them with employment and practical experience in ornithology. As a direct consequence of Bob's enthusiasm, a number of these people are currently pursuing careers in biology or other such areas of natural history, many of them on the prairies. — *M. Ross Lein*, Asst. Professor of Biology, The University of Calgary, Calgary, Alberta T2N 1N4

EVENING GROSBEAKS

We are greatly impressed with the *Blue Jay* and enjoy reading the varied articles. Being an amateur bird watcher of many years, I find the bird photographs and information especially interesting.

We have had a large flock of Evening Grosbeaks here since January 19, feeding on the sunflower heads in the back garden and a head tied to a pole in the front yard. In less than two months they have eaten 50 lbs. of purchased sunflower seeds from the two feeders set up. They have become quite tame; we can go in and out of the back door quietly and not disturb them feeding 15 feet away at the feeder. When the feeder is empty they are quite vocal in their protests!



Evening Grosbeak

J. B. Gollop

A pair of Downy Woodpeckers and a pair of chickadees have eaten suet tied to the feeder poles from January till now (March 23). The woodpeckers will feed while the grosbeaks feed at the feeders but the chickadees are not as bold; they wait until they leave.

Evening Grosbeaks have never stayed around more than two or three days before. They used to come, stay a day or so and then leave; but with ready food so available, this must be the reason for their stay. There are several other feeding places in town now for them, and they are giving a lot of enjoyment to all. — *Mrs. Arley Nickel*, Box 84, Laird, Saskatchewan S0K 2H0

NOTE: re: A. Didiuk's article "Whooping Cranes in Manitoba", condensed from *Manitoba Nature* (*Blue Jay* 34:234-236), the author is prepared to modify his statement about Whooping Cranes nesting outside the park to say that, although the possibility exists, those breeding in areas presently unknown are not contributing to the population.

PRAIRIE CHICKENS IN THE 1920's

In the week of March 1, 1977, I visited a friend in Toledo, Ohio, on the extreme west part of Lake Erie. While there I met Lee Herzberger from a nearby National Wildlife Refuge. For two years Lee had been in charge of the Greater Prairie Chicken or Pinnated Grouse project in Texas. They were on the endangered list but lately have increased to the point where they are not so considered. I was very interested because the Greater Prairie Chicken was quite common when I first came to Canada in 1919. At sunrise on a calm April or May morning I would hear their boom, boom noise on the dancing ground. By 1928 they had disappeared from our area which is about 15 miles north of the Moose Mountains.

In the *Blue Jay* there have been occasional reports of them. It would give me great pleasure to hear of breeding stock still in Saskatchewan. — G. M. Hewson, Langbank, Saskatchewan.

HIGH FLYING SNOWY OWL

I am not sure if it is generally known that Snowy Owls may migrate at a great height. Usually they are seen perched on a telephone pole on the ground or flying low.

On March 20, 1977, at approximately 1100 I noticed the Canada Geese on Wascana Lake in Regina, looking at something in the sky. I looked and looked and with some difficulty finally saw a white speck high up and almost directly overhead. With the aid of 7X binoculars, I could see it was a Snowy Owl.

It was soaring or gliding in great sweeping circles when first seen, but then it flew in a northeasterly direction, alternately gliding and flapping as it went. — Fred W. Lahrman, Saskatchewan Museum of Natural History, Regina.



Snowy Owl

R. J. L.



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